U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-281 222

Model State Information System Training Program. Volume II. Participant's Handbook for MSIS Subsystems

Cincinnati Univ, Ohio Southwestern Ohio Regional Computer Ctr

Prepared for

Environmental Protection Agency, Washington, D C

Jun 77

PB 281 222

Model State Information System
Training Program

Volume II

Participant's Handbook

for

MSIS SUBSYSTEMS

Prepared for the

U.S. Environmental Protection Agency
Office of Water Supply
Washington, D.C. 20460
under GSA Contract No. GS-05S-10458
Task Assignment OWS-77-01

by the

SouthWestern Ohio Regional Computer Center
Cincinnati, Ohio
June, 1977

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

BIBLIOGRAPHIC DATA SHEET

1. Report No.
EPA 440/6-77-028-5

2.

3. Recipient's Accession No.
PB281222

4. Title and Subtitle
MSIS Volume II Subsystems-Participant's Handbook

5. Report Date
June 1977

6.

7. Author(s)
Southwestern Ohio Regional Computer Center

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
Southwestern Ohio Regional Computer Center
3333 Vine Street
Cincinnati, OH 45220

10. Project/Task/Work Unit No.
OWS-77-01

11. Contract/Grant No.
GSA Contract #
GS-055-10458

12. Sponsoring Organization Name and Address
U. S. Environmental Protection Agency
Office of Drinking Water
401 M Street S.W.
Washington, D.C. 20460

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstracts

This handbook is designed to present all materials needed for persons participating in the Model State Information System (MSIS) Training Program.

The MSIS Training Program in MSIS subsystems consists of MSIS subsystems functions-the purpose and functions of each of the Nine MSIS Subsystems, MSIS Files - What data is maintained by the nine subsystems in computer files, and therefore accessible to the user, and MSIS tables - speical data needed by the subsystems and used only internally within the computer.

17. Key Words and Document Analysis. 17a. Descriptors

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

18. Availability Statement
REALEASE UNLIMITED

19. Security Class (This Report)
UNCLASSIFIED

20. Security Class (This Page
UNCLASSIFIED

21. No. of Pages
179

22. Price
A09 - A01

FORM NTIS-35 (REV. 10-73) ENDORSED BY ANSI AND UNESCO. THIS FORM MAY BE REPRODUCED USCOMM-DC 8265-P74

ACKNOWLEDGEMENTS

No major effort may conclude without proper acknowledgement of help received. During the seven months required for gestation and birth of the six MSIS training programs, several individuals rendered indispensable help. Joseph Bagby of the University of Cincinnati's Faculty Resource Center, and Thomas Bartlett and Dawn Richards of SWORCC bore the major burdens of creativity and revision. They were aided especially by Janis Cowperthwaite and Thomas Manz of SWORCC, who reviewed content for technical accuracy. Office of Water Supply personnel suffered many questions, especially Arnold Kuzmack, Fredrick T. Martin, and Peter Bengtson. Finally, SWORCC's Systems Division Director, John W. Rust, provided urgently needed clerical and moral support. We all thank them all. To those whom we have inadvertently overlooked, our apologies and our thanks.

Ellen G. Miller
Project Manager, OWS-77-01

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INTRODUCTION

This handbook is designed to present all materials needed for persons participating in the Model State Information System (MSIS) Training Program. The MSIS Training Program consists of six instructional courses:

VOLUME I- MSIS OVERVIEW
VOLUME II- MSIS SUBSYSTEMS
VOLUME III- DATA ENTRY
VOLUME IV- SELECTION PROCESS
VOLUME V- MSIS COMPONENTS
VOLUME VI- SYSTEM SPECIFICATIONS

Volumes I - IV were created primarily for State Water Division personnel while Volumes V and VI focus on State ADP personnel.

This participant's handbook is designed to be used in two ways: first, during the actual training as a classroom aide, and second, as a reference tool when on the job. Since a considerable amount of detail is provided and the looseleaf format facilitates additional material and updates, conscientious use of this handbook can result in greater understanding of the entire MSIS system.

PURPOSE OF COURSE

PURPOSE:

The purpose of this course is to attain two types of trainee goals: content and non-content. The content goals are knowledge acquisition and skill attainment. The non-content goal is attitude. The three specific goals for this course are:

Knowledge:

Trainees will know the nine individual subsystems comprising MSIS, the basic content of each, and their respective functions.

Skill:

Trainees can supervise, perform, or reference all manual processes needed to establish and maintain the nine MSIS subsystems.

Attitude:

Trainees will have a confident working knowledge of MSIS and the individual subsystems.

Goals are attained by completing behavioral objectives. The MSIS behavioral objectives specify the act which the trainee is to accomplish. Three other aspects of that accomplishment are given:

(a) Condition -- condition under which the trainee will perform this behavioral objective, such as by recall.

(b) Accuracy -- degree of accuracy which the trainee should attain: For example, 100% accuracy means that this behavioral objective is very important to learning MSIS; 50% accuracy means that the trainee need only be familiar with the knowledge.

(c) Method -- way of ascertaining whether trainee has achieved the behavioral objective: for example, written list; verbal response; writes on newsprint.

SUMMARY OF COURSE CONTENT

Unit 1: Subsystem Functions, Tables, and Files

This unit covers three areas:

1. MSIS subsystems functions--the purpose and functions of each of the nine MSIS subsystems
2. MSIS files--what data is maintained by the nine subsystems in computer files, and therefore, accessible to the user
3. MSIS tables--special data needed by the subsystems and used only internally within the computer

Note that in Volume I, we distinguished between base vs. optional systems. Briefly, MSIS was offered to States in this fashion: The State would get five basic MSIS subsystems, and an additional four optional ones could be selected. Why: States might not feel they needed those MSIS subsystems. However, some of the reports required by the Regulations are prepared by those optional subsystems, meaning that States would **have** to prepare those reports separately.

This course deals with all nine subsystems; it is left up to the State's trainees to correlate all the subsystems with the ones it actually selected.

Following are the units that comprise this course together with the goals, behavioral objectives, time allocation, and instructional techniques for each unit:

Unit 1: Subsystem Functions, Tables, and Files.

Goal: To give the trainees a general knowledge of MSIS subsystem functions, tables, and files.

Behavioral Objectives:

1. Name the nine MSIS subsystems.
2. Match the nine MSIS subsystems with their respective functions.
3. List the six MSIS tables.
4. Match the six MSIS tables with the subsystem that creates it.
5. Name the table which performs a given function.
6. List the eleven files.
7. Categorize the files by the type of information they maintain.

Time Allotted: Two hours and a half

Unit 2: Input Forms and Output Reports

Goal: To familiarize the trainee with all types of MSIS input forms and output reports

Behavioral Objectives:

1. List the four input form categories.
2. Specify at least two input forms per category.
3. Specify the kind of output report that will supply desired information.

Time Allotted: Four hours

Unit 3: User's Manual

Goal: To give the trainee an understanding of the contents of the MSIS User's Manual.

Behavioral Objectives:

1. Reference the User's Manual to solve class problems.

Time Allotted: One hour and a half

Unit 4: Optional Material
(to be inserted as required).

Purpose

As discussed in Volume I, the Implementation Regulations for the Safe Drinking Water Act specify five reporting requirements for States taking primacy:

	Number
§ 142.15 Reports by States. Each State which has primary enforcement responsibility shall submit to the Administrator the following information:	
(a) Additions or corrections to the State's inventory of public water systems, as such additions or corrections are made if feasible, and in any event by January 1 of each year.	1
(b) An annual report to be submitted by January 1 of each year, covering the preceding Federal fiscal year ending September 30 of each year, and consisting of:	
(1) A summary of violations by public water systems in the State of the primary drinking water regulations and of enforcement actions taken by the State;	2,3
(2) A summary of the status of each variance and exemption granted by the State which was in effect during any part of the calendar year.	4
(c) Prompt notification of the granting of a variance or exemption. The notice shall include a statement of reasons for the granting of the variance or exemption, including support for the need for the variance or exemption and for the finding that the granting of the variance or exemption will not result in an unreasonable risk to health. A single notification statement may be used to report two or more similar variances or exemptions.	5
(d) The annual report submitted pursuant to paragraph (b) of this section shall be made available by a State to the public for inspection at one or more locations within the State.	

The purpose of MSIS is to maintain and analyze records so as to prepare the first four required reports. The fifth reporting requirement, prompt notification of the granting of a variance or exemption, is done separately from MSIS.

Services

MSIS offers several services to States:

1. Reduces costs of implementing the new Regulations by using a centrally-developed MSIS computer system (funded by OWS).
2. Gives States local control of MSIS by operating it on a computer facility of the State's choice.
3. Produces timely and accurate reports which comply with four federal reporting requirements.

4. Provides positive control over local water suppliers' sampling, using optional sample scheduling and audit trails.

5. Optimally utilizes scarce technical personnel through priority targeting of State inspection programs.

6. Automatically monitors compliance schedules under variances and exemptions, and enforcement actions.

Key Features

Finally, MSIS has several key features. First, it is a batch computer system, meaning that it operates only when batches of input data have been accumulated. The opposite is an on-line or real-time computer system, which directly inputs data to computer files, with no delay. Batch systems often use keypunched cards for input; on-line systems frequently utilize typewriter terminals.

MSIS is a management information system. This means that it maintains records and prepares reports as directed. The reports are used by States and EPA water division personnel to ascertain the quality of the States' drinking water, and to keep up to date on the status of enforcement actions, and variances and exemptions.

The combination of these two features--batch system, management information system--means that State water managers use MSIS to monitor State water quality and to prepare needed federal reports. However, the monitoring occurs after the fact, after the violation, after the violation has been reported by letter or telephone to the State. Thus, the last key feature of MSIS is that it is an after-the-fact system; collecting, maintaining, and reporting data on events which happened earlier.

The functions of each subsystem, and the major purposes of its computer programs, are:

Subsystem Name	Function, Programs
Regulation (REGS)	REGS maintains a computer version of current federal regulations and sampling requirements. It also maintains State regulations. REGS has two computer programs which provide: a. a means of establishing a computer version of the State and federal regulations, and b. a printed image of the computer version.

Public Water System Inventory (PWSI)	PWSI maintains descriptive data on each community PWS in the State, such as name, address, production capacity, and water sources (surface or ground). Community PWSs should be maintained by 6/24/77. Non-community PWSs which serve transient populations, will be required to be monitored and thus maintained on PWSI two years after the effective date of the National Interim Primary Drinking Water Regulations. PWSI has 11 computer programs which: a. convert the National Inventory File to PWSI's Public Water File (PWF), and b. provide the capability of selecting records from the PWF to be printed in one of four formats.
Water Quality Compliance (WAQC)	This is the heart of MSIS. WAQC consists of 36 programs, 19 of which create reports necessary to monitor a PWS's reports on operation, sampling, and water quality. The major program functions, aside from report creation, are: a. keeping records of analytical results, b. comparing them with the REGS and PWSI to determine violations, and c. scheduling future sampling for PWSs according to the requirements in the regulations. WAQC tells whether or not the water supplied by a PWS for human consumption meets the specifications in the regulations.
Federal Reporting (FEDR)	FEDR prepares machine-readable information to fulfill the federal requirement concerning (1) violations, (2) changes to the State's public water system inventory, and (3) the status of variances and exemptions granted. Thus, it fulfills the three of the four requirements outlined in Section 142.15. FEDR has two computer programs; each creates a magnetic tape file to be submitted to the EPA.

Standard Processing (MSIS)	Note: Don't confuse this MSIS subsystem with the overall system also called MSIS. MSIS performs functions for the other subsystems which occur frequently, such as keeping history records and printing error reports. MSIS contains five computer programs which: a. create internal tables for use by the other subsystems, b. print error reports, c. maintain history files for all files except the PWF; the PWF is so large that it has its own history file module, d. select from and print records from the history files, and e. purge the history files.
Sanitary Survey (SRVY)	SRVY has two computer programs which: a. rank each of the PWS according to the State's priority for the above five criteria, b. select a State-specified number of PWS off the top of the list, and c. print those records selected on a report
Operator and Mailing (OPER)	OPER, an optional subsystem, maintains a file of names and addresses of operators and other groups. It will produce mailing labels and lists when required. OPER is made up of five computer programs which: a. create and update the Operator and Mailing file, b. select records from the file for printing, and c. print either one of two kinds of listings or mailing labels.

The subsystems interact with each other. The importance of the PWSI and WAQC subsystems is seen in the slides and in the following hypothetical discussion.

1. The State sets up the computer version of the regulations via the REGS subsystem upon implementation of MSIS. It also establishes the PWS inventory by converting the existing National Inventory File using the PWSI subsystem. Of course, the PWS inventory file may be updated by using the correct input form.

2. Suppose a PWS operator gets certified. The State reports it to MSIS. The PWSI is updated and he is then put on the Operator and Mailing File via the OPER subsystem.

3. Next, assume the PWS also requests from the State a variance from the fluoride MCL because the raw water source has an exceptionally high level of fluoride and the treatment technique used is the best available but still not able to bring the contamination under the MCL. The State grants the variance and establishes the PWS on the Variance and Exception File via the VAEX subsystem. The VAEX subsystem sends the information of the variance to the PWSI subsystem to use when determining violations.

4. Back at the PWS, water is sampled as required. The samples are analyzed by a certified laboratory, which reports the results to the State.

5. The State inputs the laboratory results to the WAQC subsystem. WAQC checks to see:
    (1) did a certified laboratory perform the analysis,
    (2) is the laboratory certified for this particular analysis, and
    (3) was the correct analysis method used?

6. WAQC then checks the results against the regulations in REGS subsystem. Suppose WAQC finds three violations:
    . Fluoride MCL
    . Barium MCL
    . Sampling violation

    It then checks information from the PWSI subsystem for variances and exemptions and finds that the MCL violation for fluoride is alright, but the other MCL violation and the sampling violation are not. WAQC then records the two violations, sees if check sampling requirements were met, and sets up future sampling procedures for the PWS.

7. WAQC also prints a violations report, which State personnel examine and follow up with enforcement actions.

8. All enforcement actions are input to the ENAC subsystem; however, let us suppose an error is made in filling out an ENAC input form.

9. The error is sent by ENAC to the MSIS (Standard Processing) subsystem to be printed on a report. The State corrects the error by inputting correct data to ENAC. To help State personnel keep track of data entered to the subsystems, specified inputs to VAEX, OPER, WAQC, and ENAC are copied to the MSIS subsystem as history records. PWSI keeps its own history records.

10. Suppose the State decides that is wants to do a sanitary survey of every PWS that has had a violation. The SRVY subsystem will identify this PWS because it had two violations, as seen above.

11. At the end of the year, the violations, changes to the PWSI, (granting a variance), and the status of all variances and exemptions are input to FEDR subsystem. Thus, three reporting requirements--changes to the PWSIF and violations--are met by FEDR. The fourth requirement is fulfilled by a report on all enforcement actions taken.

In summary, MSIS helps the State keep information on PWSs, operators, laboratories, analytical results, regulation requirements, violations of those requirements, variances and exemptions, enforcement actions, and mailing lists. In addition to keeping these records, it creates needed federal and State reports.

Files

Purpose

The purpose of computer files is to hold together logical groups of records. Users can access files in order to print needed reports. Computer files are the same as office files, as the slides show.

Files are of critical importance because they contain the records that water division personnel will want to update and print out in order to monitor the States' drinking water quality.

There are ten MSIS files which trainees need to know about in order to use.

Ten MSIS Files

Here are the MSIS files, the subsystem that maintains them, and their functions.

File	Maintaining Subsystem	Function
Public Water (PWF)	PWSI	This file is a workhorse, telling everything you want to know about a PWS. Its records include data about PWS name, address, design capacity. The PWF can be created two ways. First, it will be automatically created from all State data now on the National Inventory File. Second, States can use input forms to put PWSs on the PWF. Data from the PWF is passed to FEDR. meeting one of the four reporting requirements which MSIS can fulfill.
Periodic Sample (PSF)	WAQC	Since we know that WAQC receives all the laboratory analyses, it makes sense that those analyses go into the PSF. After a check to see if a certified lab was used, and that the correct analysis techniques were used, the analysis data is summarized and put onto the Sample and Analyses File. Now the PSF is ready to be purged of the transferred records, for it would create too unwieldy a PSF to keep all those original transactions.

Sample and Analysis (SAF)	**WAQC**	We just saw that the SAF is created by the summarized sample and analysis data from the PSF. The regulations call for reporting on summaries of analyses. From the viewpoint of compliance with the regulations, the SAF is critical since it is used to determine if violations have occured of sampling, MCL, or reporting requirements.
Violations (VIF)	**WAQC**	All violations of the State and federal regulations are entered on the VIF. Note that WAQC maintains three files. This file provides information for federal reporting. A printed version of this file can also be used to fulfill the requirement that the State make available this information for public inspection.
Standard History (SHF)	**MSIS**	Recall that the Standard Processing subsystem (MSIS) services the other subsystems. It makes sense, then, that it keeps up a Standard History File which contains an account of all transactions for the rest of the files discussed here. However, there is one exception, the PWF (our workhorse file with all the PWS data) PWF is so large that it must have its own history file to keep SHF from becoming bloated.
Public History (PHF)	PWSI	Here's the one and only separate history file, to keep records on all transactions to the PWF.
Deviations (DVF)	FEDR	DVF is a file designed exclusively for federal reporting that shows all PWS violations of federal regulations. It also contains a summary of information on variances and exemptions which it obtains from VAEX. The DVF is reported to the federal government to fulfill two more reporting requirements.
Variances and Exemptions (VEF)	VAEX	VEF contains information about variances and exemptions granted and the status of PWSs in meeting the criteria set up when the variance or exemption was granted.

Tables

We just learned that files contain information that is accessible to users. You also learned that the files pass information among themselves, as directed by the subsystem programs.

Table Characteristics

Tables are logical groups of records which are used internally by computer files and computer programs. Their purpose is to expedite computer processing, thus allowing MSIS programs to be run in shorter time and saving money.

Tables have certain characteristics:

1. Define codes used elsewhere: For example a table holds the full name equivalent of a two-position code for State name.
2. Validate information: For example, a table compares an incoming laboratory identification code with the list of certified laboratories.
3. Are directly accessible: Table information is generally stored on magnetic disc, which is directly available for fast computer internal processing. Saved time means saved money.
4. Once established, seldom changed: Tables contain basic information needed by files and computer programs; that basic information may be occasionally supplemented, but is always in demand as long as the system is operated.

Tables are taught because (1) they contain basic data used by MSIS--the regulations, laboratory information, values for codes, etc.-- and (2) they are occasionally updated, requiring preparation of associated input forms, some of which must be prepared by the State.

Seven MSIS Tables

Table	Maintaining Subsystem	Function
Error Message (EMT)	MSIS	EMT matches error codes passed from the other subsystems to the message that will be printed out. The EMT's data is provided with MSIS, but may be supplemented by the State.

Table	Maintaining Subsystem	Function
Data Element (DET)	MSIS	The DET holds data element mnemonic name and catalogue number, both of which may be used when looking up a data element in the Data Element Dictionary. It also tells the location of that data element within a record. The DET is supplied by MSIS, but may be supplemented by the State.
Code Value (CVT)	MSIS	The CVT contains the valid codes used for 27 data elements some of which must be determined by the State (the regulations require that States decide some codes, such as laboratory owner type code). The CVT is used to check input data for acceptable values. A dummy CVT is supplied to each State for installing MSIS, but before the State can operate MSIS on its own, it must recreate the CVT.
Laboratory (LBT)	WAQC	This table lists those labs which have been certified, the analyses they are certified to perform, and allowable methods. A dummy LBT will be provided to install MSIS, but the State LBT must be created before operations begin.
Public Water (PWT)	PWSI	The PWT is created automatically or internally by PWSI; it contains brief information on public water systems that are frequently used.
Regulations File (RGF)	REGS	It was decided to include the RGF under tables, since it is used only by computer programs and never by the user. It contains both State and federal regulations. For MSIS installation, the RGF will be provided containing the federal regulations. States do not have to put any of their own regulations into it to either install MSIS, or to operate it. However, a State may enter any regulations as long as they are more stringent than the federal regulations.

Table	Maintaining Subsystem	Function
Compliance Status File (CSF)	WAQC	The CSF is also included here since it is used only internally. Its purpose is to maintain records about a PWS's past reporting and to determine future reporting requirements.

Unit 2: Input Forms and Output Reports

Agenda

This unit covers:

1. Input forms
2. Output reports

Only major input and output reports will be covered. Course III, Data Entry, covers the same forms in great detail, and Course IV, Selection Process, deals exclusively with preparing and using the input forms needed to obtain tailor-made reports.

Processing Option Forms

There are four kinds of forms which specify processing options. Processing options are variables to computer programs which allow flexibility for the user to choose what he would like the computer to do.

PROC

The processing option form "PROC" varies slightly from program to program but the options that might be found on this form include:

1. What date will be printed on the report and what dates it will cover,
2. Whether a special file or report should be created or not, and
3. Whether to print a complete or condensed report, or no report at all.

SORT

The "SORT" processing option form is standard wherever used. On it, the user specifies the names of data elements which will be sorted. The information about each data element can be found in the Data Element Dictionary.

In addition to specifying the data elements that will be used for sorting, the user also specifies the sequence in which they will be sorted and finally, within a selected data element, the user can specify either an ascending or descending mode.

SEL1 and SEL2

The "SEL1" AND "SEL2" processing option forms are standard when used and are always used together. Their function is to specify the selection criteria the computer is to use when selecting records for a report.

On "SEL1", the user specifies the field(s) which contain(s) the information used for selection. The user also specifies a particular value or valid entry for each field which can be used as a basis for selection. Finally, the user enters the two-digit code preceding the relation symbol field on "SEL2" which will contain the symbol to be used in comparing against the data element value for selection. In specifying selection criteria it may be desired that two conditions be met in order for a record to be selected.

For example, in selecting PWSs the user may want all community PWSs that serve a population of more than 100,000 people. This is called an "and" condition because the PWS must be a community PWS and it must serve a population greater than 100,000 entities. It is also possible to want two different kinds of entities, e.g., the user may want all PWSs that either have a zip code of 11111 or 11112. This is called an "or" condition because a PWS may be selected if it has a zip code of 11111 or 11112. The "and" and "or" conditions can also be combined. For example, selection of all records that are community PWSs and serve more than 100,000 people and have a zip code of 11111 or 11112 may be desired. Complicated selections can be developed for up to 35 conditions. (Volume IV contains a detailed explanation of the selection process).

Table Creation Forms

In Unit 1 the major aspects of tables were discussed. One of those aspects was that tables are used internally by the computer to perform its functions. Another was that once the tables were created, they change infrequently (most of the tables are supplied upon installation). However, since MSIS is designed to accomodate change, it does provide input forms and programs for changing the tables.

Error Messages

Each kind of error identified has been given a code and an error message. Error Message Table input form is used to establish the initial codes with their related messages on the EMT. When a new error is identified, it is input with this form.

Two codes may be input per keypunch card; therefore, two lines are provided for each entry. If only one error code and message is to be defined, the second line is left blank.

Data Elements

Each data element in MSIS has a mnemonic name and number. The names are called "Data Element Mnemonic Names" and the number is called a catalogue number. Each data element is also defined in terms of a description of the field it represents. The Data Element Table input form passes these definitions to the DET. The data elements are indexed on the DET by file; therefore, if a data element is used by more than one file it must be input for each file.

Code Values

Most data elements have been defined, including their acceptable values. In some cases, however, the acceptable values for a data element must be prescribed by the State, and therefore have not been predetermined. The States establish these acceptable values and their descriptions through input of the "Code Value Table input form".

Again, each data element is established with the file it relates to: if it is used by more than one file, it must be input for each file. In addition, each value and its description must be input for the data element. Therefore, if a data element is used by two files and has three different acceptable values, an entry must be made for each of the three acceptable values for the first file and then three more times for each of the acceptable values for the second file for a total of six entries.

Regulations

Basically, the Regulations input forms provide a means for the State to input its own regulations to the REGS subsystem, provided that they are no less stringent than the federal regulations. The forms are also used to input required State data.

There are eight REGS input forms; they fall into two groups. The first group deals with sampling frequencies and MCLs for the five major contaminant categories. The second group specifies conditions. The breakdown is.

A. Contaminant MCLs and sampling frequencies

   1. Chemical
   2. Physical (turbidity)
   3. Microbiological (coliform bacteria)
   4. Radionuclides -- Alpha
   5. Radionuclides -- Beta

B. Conditions:

   6. Population size for determining bacti sampling frequencies
   7. Temperature ranges for determining Fluoride MCLs
   8. Major beta emitters making up Gross Beta

Note: The monthly PWS operation reporting requirement specified in the regulations is not input to REGS since it is automatically covered in WAQC.

Laboratory Table

Input to WAQC, these forms establish a table of certified laboratories, the expiration date of their certification, the contaminant group(s) they are certified to analyze for, and the analyses methods they are certified to use. Each State must input its certified laboratories and maintain the table with these forms.

Record Creation and Maintenance

A record creation and maintenance form is the document used to put information about a particular PWS on a particular file. The form is also used to change certain information about a PWS or delete all information on a PWS.

There are a total of five record creation and maintenance forms in MSIS, although one form may be divided into parts or pages where the separate pages are assigned separate form numbers.

The principal form in this category is the PWS record creation and maintenance form. The other subsystems which require and have a record creation and maintenance form are WAQC, VAEX, ENAC, and OPER.

The remaining subsystems, (REGS, FEDR, MSIS, and SRVY) do not maintain information on PWSs as such, and therefore, do not need or have record creation and maintenance forms.

Water Quality Transactions

The water quality transaction input forms are the heart of what the whole MSIS system is all about, that is, keeping records of water quality. Although the other input forms are necessary for the maintenance and use of MSIS, these input forms provide the means of entering the principal data that MSIS is designed to maintain. They will be the forms that will probably be entered most frequently and regularly.

The four types are: sample deletion transactions, chemical or radiological analysis input transactions, bacteriological or turbidity analysis input transactions, and bacteriological or turbidity summary analysis input transactions.

The sample deletion transactions forms provide means of removing incorrect or outdated sample analysis information from the PSF and SAF.

The remaining three water quality transactions input forms are quite similar in format. Although used to input different information, all are concerned with sample and analysis data.

A good example of these forms is the chemical or radiological analysis input form. Due to the similarity of the information required, the analyses results for both contaminants can be reported on the same form.

The regulations, and therefore MSIS, provide the option of reporting bacteriological and turbidity sample and analysis data in summary form. The bacteriological or turbidity summary analysis input form provides the capability for entering that summary data into MSIS.

Purpose

So far in this course, we have been concerned with how the computer did its work and received its information. Now, we are concerned with the results of that work.

The purpose of output reports is to share with the user information that has been stored and manipulated by the computer.

MSIS Output Reports

There are four categories of MSIS output reports:

1. Statistical
2. Input
3. Error
4. Informational

The first three deserve only brief mention; the bulk of our attention will be paid to informational output reports.

Characteristics of three MSIS reports

1. Statistical reports result from the updating of a file, and present the numerical facts about that update. For instance, number of records added, number of records deleted, number of records changed, number of records on the file before and after the update.
2. An input report shows what transactions were input; it provides a means for the user to verify that what was input was the same as the desired input. These reports are produced for sort options, selection criteria, table information, and water quality transactions.
3. With every input or update there is the possibility of errors, so there are error reports. There are three types of error reports:
    a. Processing options error report (standard error report)--tells what errors occurred on the PROC, SORT, SEL1 and SEL2 forms.

    b. Data entry error report--covers all other input errors; these messages begin with "Invalid", "Reject", or "Warning".

    c. The standard warning report--lists the fields of information that were omitted on input but are fields required by EPA in federal reporting. See Part IV for the EPA required data elements.

Purpose

MSIS prints out upon certain occasions pre-formatted reports. In some instances, those reports may be specifically selected by a user; in others, the programs automatically print the reports. These reports are called informational reports.

The purpose of the informational reports is to aid State water division personnel to monitor PWSs and drinking water quality. They are intended to provide useful information in a useable format.

We will discuss four representative examples of the more than 40 MSIS informational reports.

PWS Comprehensive Listing and 3 Subsets

The PWS comprehensive listing tells everything about each PWS on the Public Water File. It is a very large listing, as may be imagined when as many as 4,000 or 5,000 PWSs may be on the Public Water File. The PWS comprehensive listing includes input transactions which resulted in updating the PWF. MSIS offers three types of shorter reports containing PWS data:

1. PWS condensed listing,
2. PWS production data report, and
3. PWS discretionary data report.

MSIS History Report

This report contains a history of VEF, EAF, OMF, and VIF transactions. It provides the necessary audit trail for the State.

Compliance Summary Report

This is a key report, since it contains a record of the violations of both federal and State regulations. Do recall that only violations of federal regulations are reported annually to the federal government. This report will probably be used by the State to aid in enforcement responsibilities.

Chemical Sampling Schedule Report

This report is a good example of other reports that can be produced to list the number of samples required in a given amount of time.

It is also a turnaround document. This means that the computer printed some information on a pre-printed form; the State asked the PWS to write in additional information; and upon receipt, the State input the new information to MSIS.

21B1
(1-4)

MSIS BACKGROUND INFORMATION

Name: ________________________________ (5) (30)

Postal Code: ______ (31-32)

Date: ___/___/___/___/___/___ Month Day Year (33-38)

1. Circle which MSIS training courses you have already taken:

   (39) a. None. Go to question 2.

   (40) b. MSIS Overview

   (41) c. MSIS Subsystems

   (42) d. Data Entry

2. Have you filled out one of these MSIS Background Information forms before?

   (43) ___ Yes. Thank you for the data; go to the Pre-test.

   (44) ___ No. Go to question 3.

3. Age: ____ years (45)

4. Sex: ___ M (46) ___ F (47)

5. What was the highest level of schooling you attained? (circle one)

9 10 11 12	13 14 15 16	M.A./M.S.	Ph.D.
High School (48)	College (49)	(50)	(51)

   Other (please specify) ________________________________ (52-76)

6. Specify your major where appropriate:

____________	____________	____________	____________
College (77)	M.A./M.S. (78)	Ph.D. (79)	Other (80)

21B1
(1-4)

7. What is your job title? ______________________________
(5) (30)

8. How long have you held your present position? ___ years ___ months
(31) (32)

9. How many years experience do you have in the general area of your present job position?

____
(33) (34)

10. Have you had training related to your present position in the past two years (other than the present MSIS training)?

(35) ___ No. Go to question 11.

(36) ___ Yes. Please answer the following:

a. What was the subject? ______________________________
(37) (51)

b. What was the length of training? ______________________
(52) (55)

c. Who offered the training? __________________________
(56) (65)

d. Rate your knowledge resulting from the training.

(66) None (67) A little (68) Some (69) Quite a bit

(70) Great deal

11. Please rate your current knowledge level of data processing (circle the appropriate answer).

(71) None (72) A little (73) Some (74) Quite a bit

(75) Great deal

12. Please rate your current knowledge level of the Federal Regulations pertaining to Safe Drinking Water Act of 1974 (circle the appropriate answer).

(76) None (77) A little (78) Some (79) Quite a bit

(80) Great deal

Thank you for your cooperation.

II.1.T1
21T1
(1-4)

PRE-TEST

MSIS SUBSYSTEMS

Name: ______________________ (5-30) Postal Code ____ (31-2) Date __/__/__ Month Day Year (33-8)

1. Circle the purpose of the Safe Drinking Water Act:

   (39) a. Monitor drinking water quality
   (40) b. Report to the federal government drinking water quality
   (41) c. Assure the public is provided with safe drinking water

2. Circle the three phrases which describe a batch computer system:

   (42) a. On-line
   (43) b. Accumulates data
   (44) c. Instantaneous sending of data
   (45) d. Keypunch cards
   (46) e. After-the-fact

3. How many subsystems does MSIS have? (47)______________________

4. Match the types of input forms with their function:
   (More than one function may be appropriate)

   Form

   a. Processing option
   b. Table creation
   c. Record creation & maintenance
   d. Water quality transactions

   Function

   (48) ___ Enter data to MSIS tables
   (49) ___ Enters PWS-related data to files
   (50) ___ Enters sample and analysis data
   (51) ___ Enables the user to specify needed reports
   (52) ___ Enables the user to specify needed PWS listing

5. Circle the correct answer. REGS, MSIS, and SRVY subsystems do not have record creation and maintenance forms because:

   (53) a. they don't have any files
   (54) b. they only print reports
   (55) c. they don't maintain PWS data

6. Match the four kinds of output reports with the type of information each supplies:

Report

a. statistical
b. error
c. input
d. informational

Information

(56) ____ What violations occurred yesterday
(57) ____ Number of PWSs on the Public Water File
(58) ____ What violations occurred last month
(59) ____ Is the MCL for arsenic on the Regulations File correct?
(60) ____ Why didn't I get the report I requested?

. Match each subsystem with its appropriate function:

Subsystem

a. Regulations
b. Enforcement Actions
c. Water Quality Compliance
d. Public Water System Inventory
e. Variances & Exemptions
f. Standard Processing

Function

(61) ____ Automatically translates the PWS Inventory File into MSIS format
(62) ____ Maintains data on PWS's having special conditions
(63) ____ Checks analyses of water quality to see if authorized methods were used
(64) ____ Performs common functions for other subsystems
(65) ____ Contains the criteria used to determine violations
(66) ____ Keeps information on compliance actions

. Circle T (True) or F (False) for the following statements:

T F (67) MSIS is a subsystem name as well as the system name.

T F (68) There are ten subsystems in MSIS.

T F (69) FEDR creates printed reports for the federal government.

T F (70) A summary of State enforcement actions is reported annually.

T F (71) Tables and files are both accessible to the user for selecting reports.

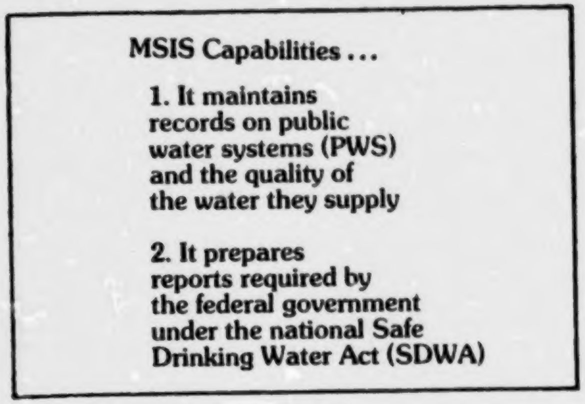
T F Water quality transaction input forms are used to enter
(72) analytical results.

T F Any laboratory may submit analysis results.
(73)

9. Rate your current level of knowledge about MSIS:

(74) None
(75) A little
(76) Some
(77) Quite a bit
(78) A great deal

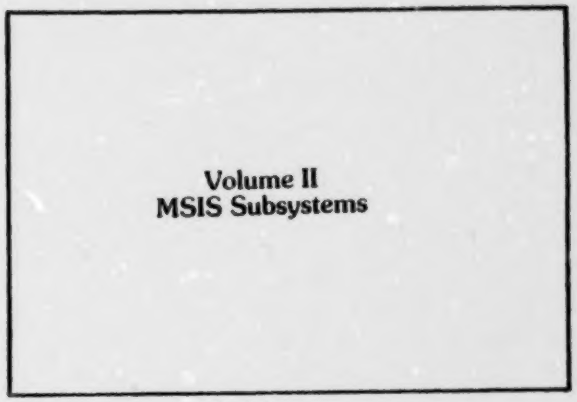
SLIDE REPRODUCTIONS



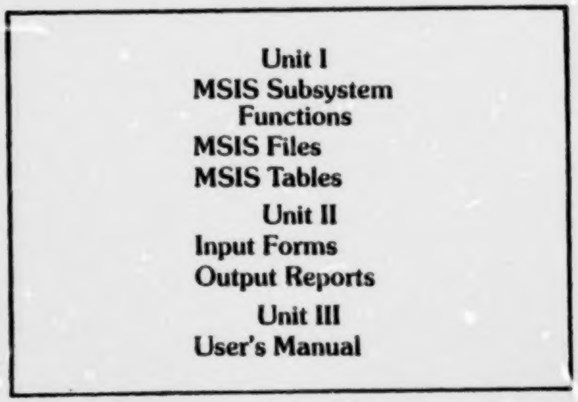
MSIS Capabilities . . .

1. It maintains records on public water systems (PWS) and the quality of the water they supply

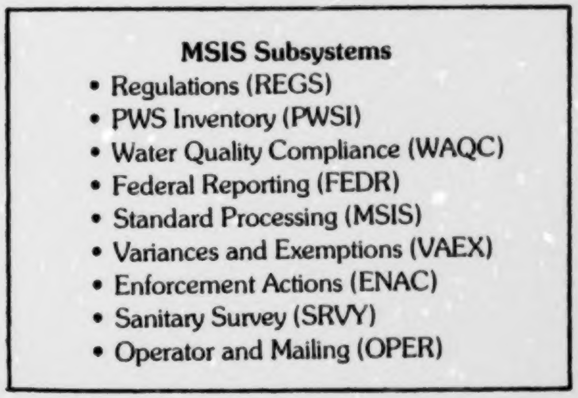
2. It prepares reports required by the federal government under the national Safe Drinking Water Act (SDWA)



Volume II
MSIS Subsystems

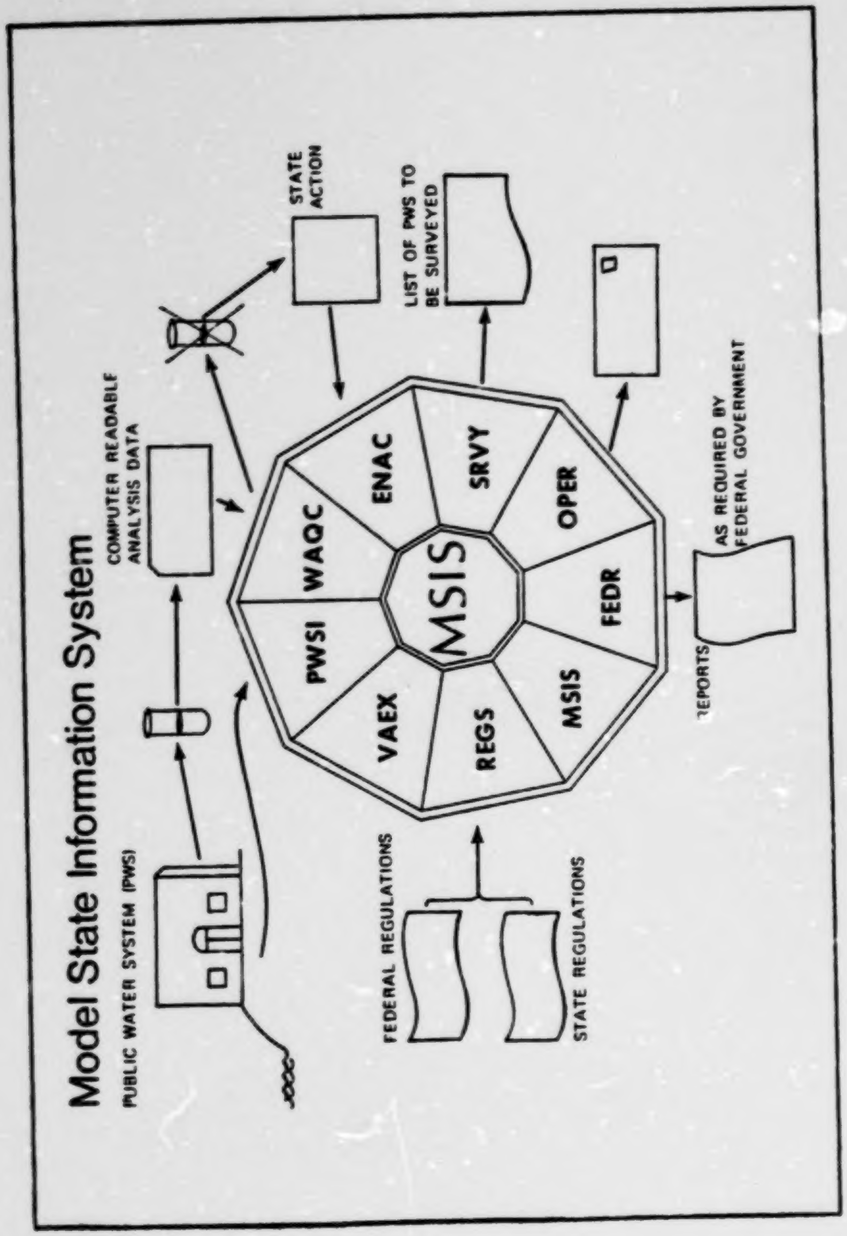


Unit I
MSIS Subsystem Functions
MSIS Files
MSIS Tables
Unit II
Input Forms
Output Reports
Unit III
User's Manual



MSIS Subsystems

- Regulations (REGS)
- PWS Inventory (PWSI)
- Water Quality Compliance (WAQC)
- Federal Reporting (FEDR)
- Standard Processing (MSIS)
- Variances and Exemptions (VAEX)
- Enforcement Actions (ENAC)
- Sanitary Survey (SRVY)
- Operator and Mailing (OPER)



Model State Information System

PUBLIC WATER SYSTEM (PWS)
COMPUTER READABLE ANALYSIS DATA
STATE ACTION
LIST OF PWS TO BE SURVEYED
FEDERAL REGULATIONS
STATE REGULATIONS
REPORTS
AS REQUIRED BY FEDERAL GOVERNMENT
MSIS
PWSI
WAQC
ENAC
SRVY
OPER
FEDR
MSIS
REGS
VAEX

MSIS Subsystem

Independence

Dependence

MSIS Files

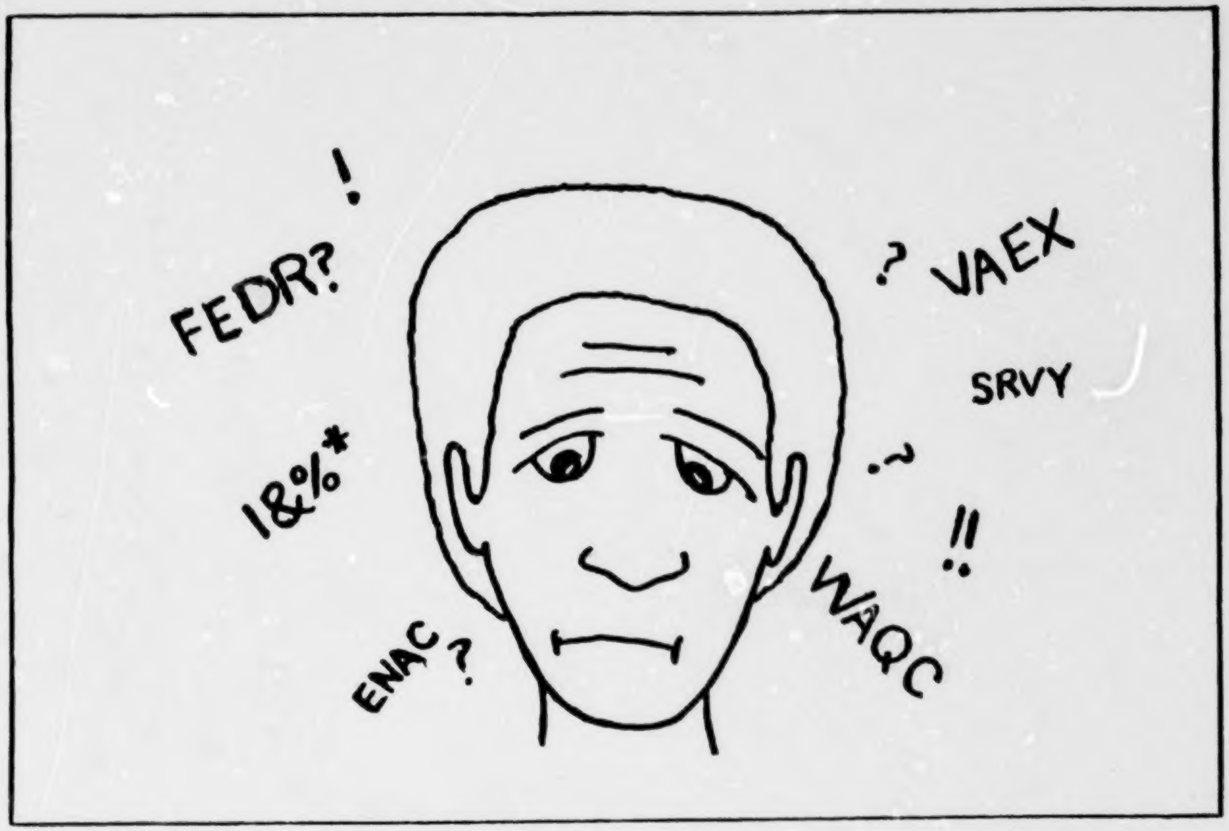
- Public Water (PWF)
- Periodic Sample (PSF)
- Sample and Analysis (SAF)
- Violations (VIF)
- Standard History (SHF)
- Public History (PHF)
- Deviations (DVF)
- Variances and Exemptions (VEF)
- Enforcement Actions (EAF)
- Operator and Mailing (OMF)

MSIS Tables

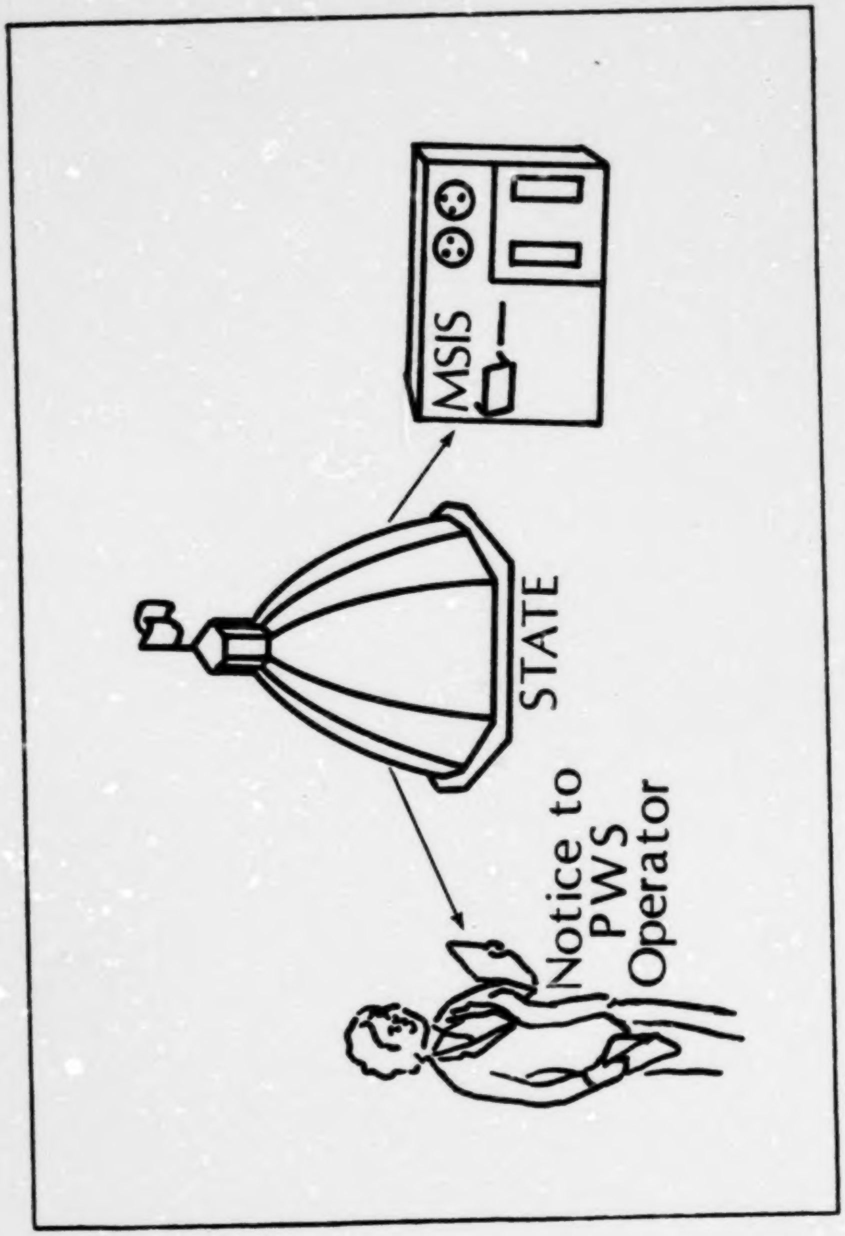
- Error Message (EMT)
- Data Element (DET)
- Code Value (CVT)
- Laboratory (LBT)
- Public Water (PWT)
- Regulations (RGF)

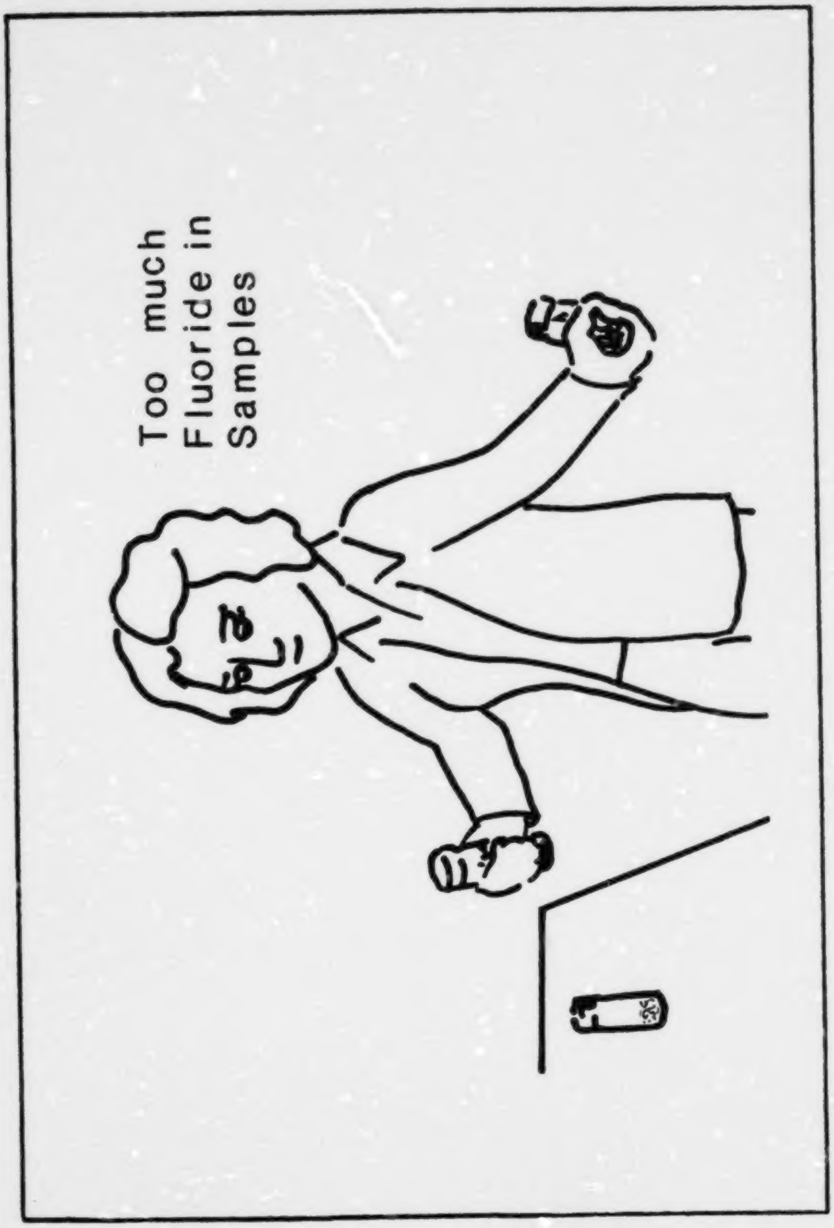
Characteristics of Tables

- Define codes used elsewhere by the computer
- Validate information
- Are directly accessible
- Once established seldom changed

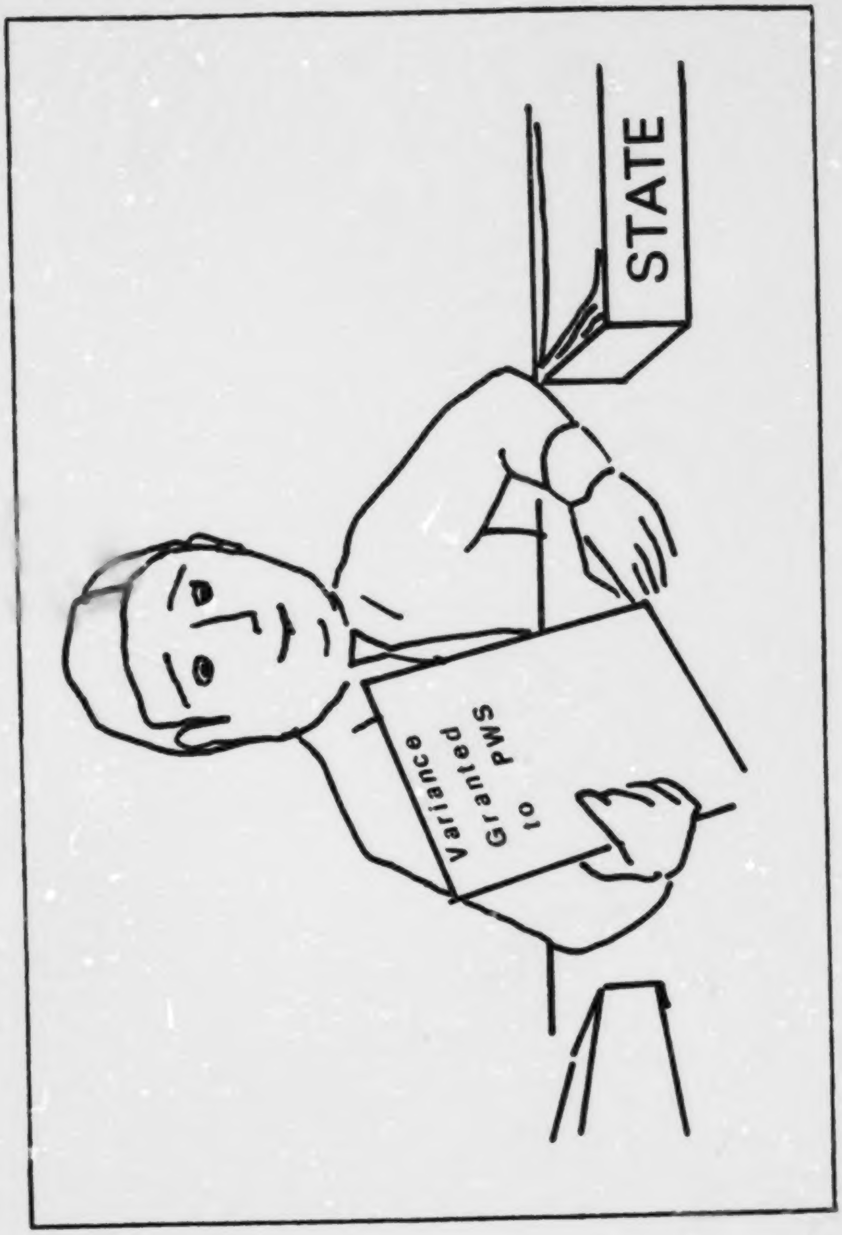

!
FEDR?
1&%*
ENAC?
? VAEX
SRVY
?
!!
WAQC

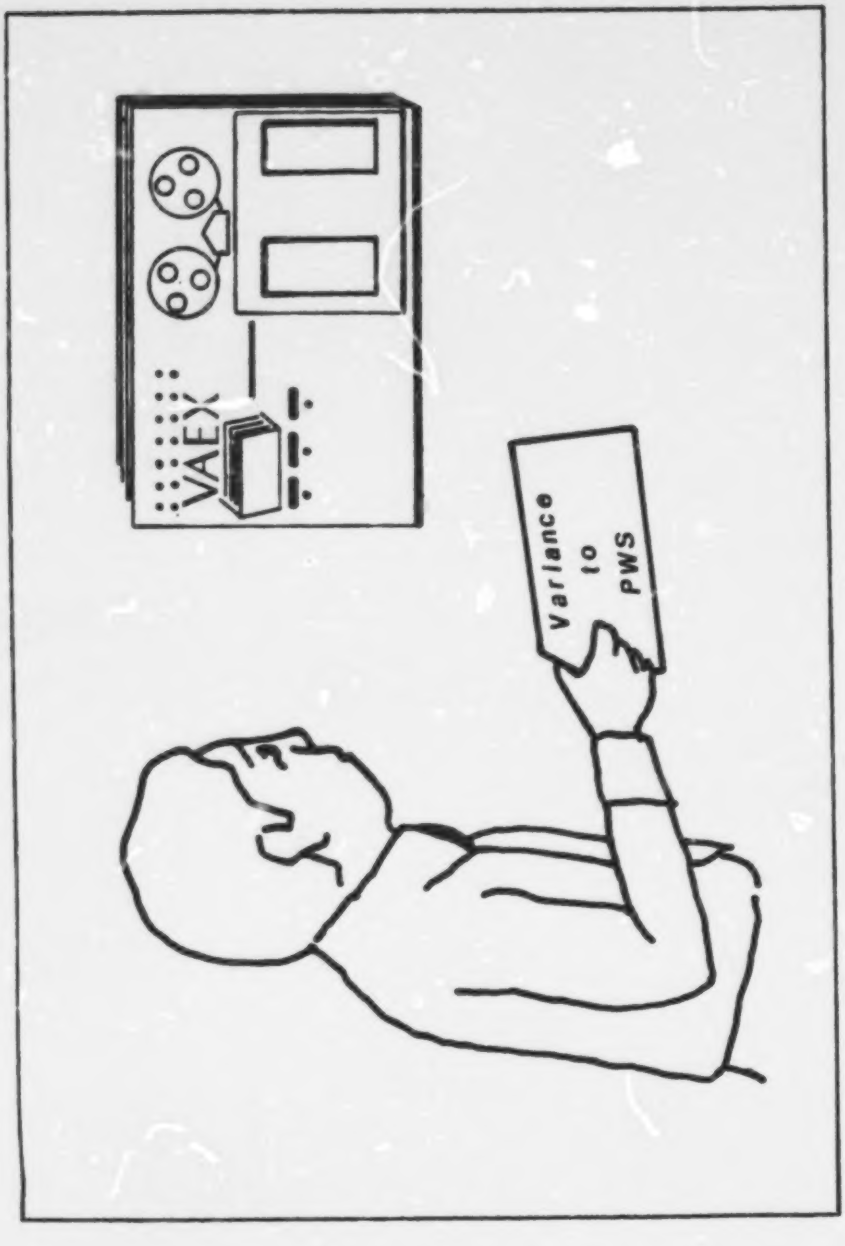
An Example
would
really help

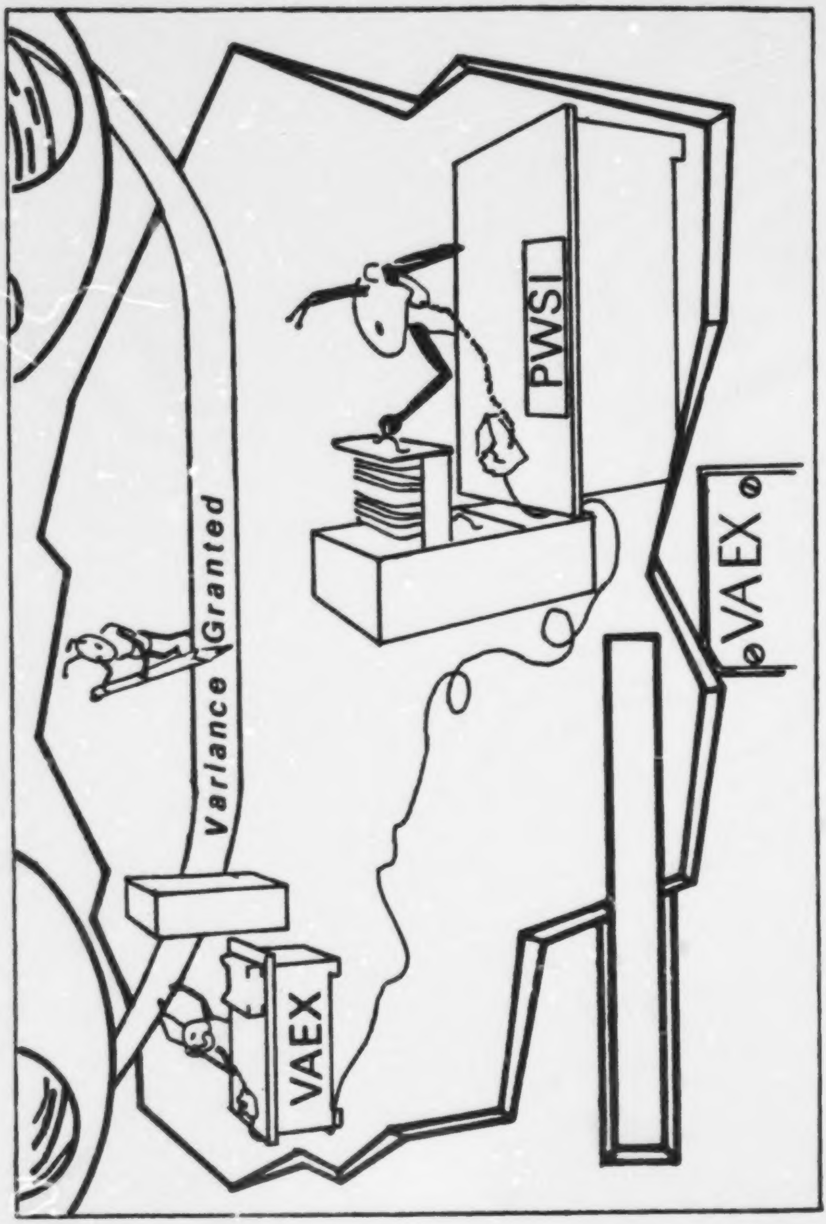

MSIS
STATE
Notice to
PWS
Operator

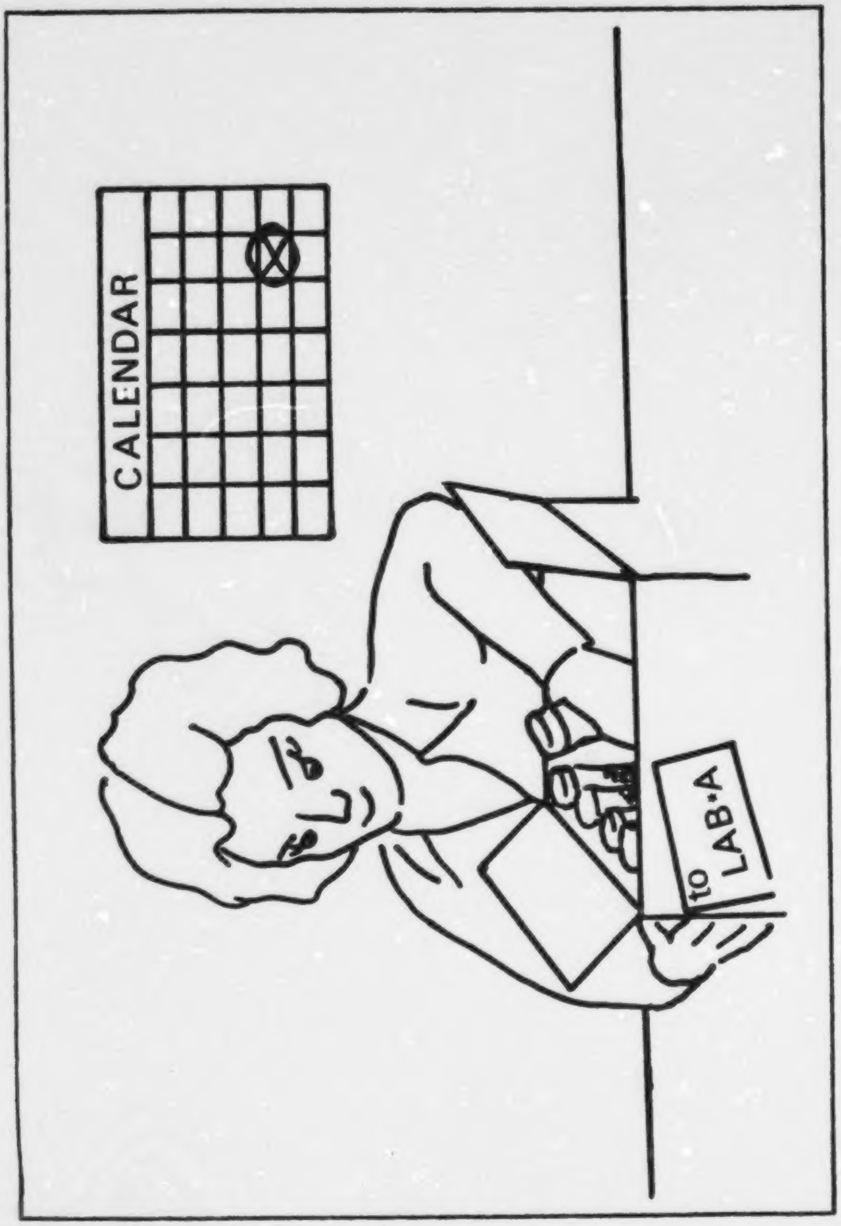

Too much
Fluoride in
Samples

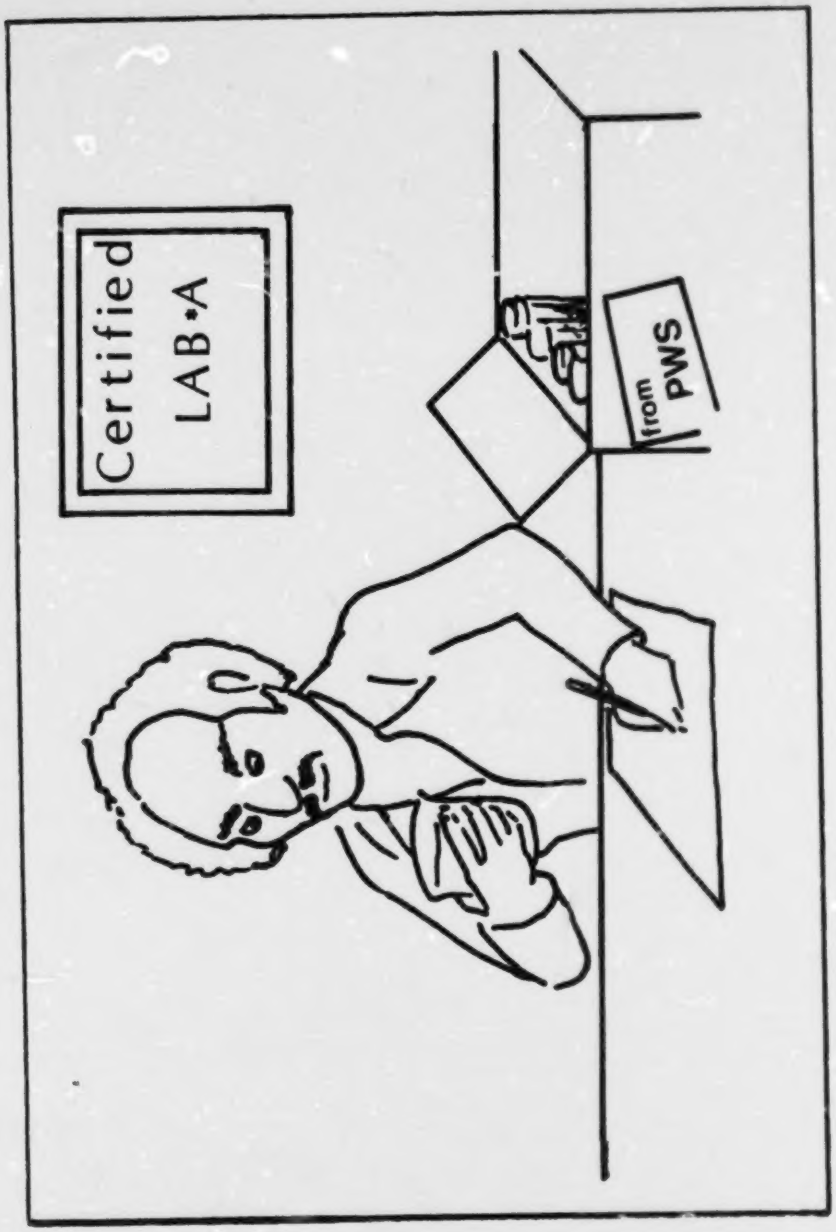
II.1.S8

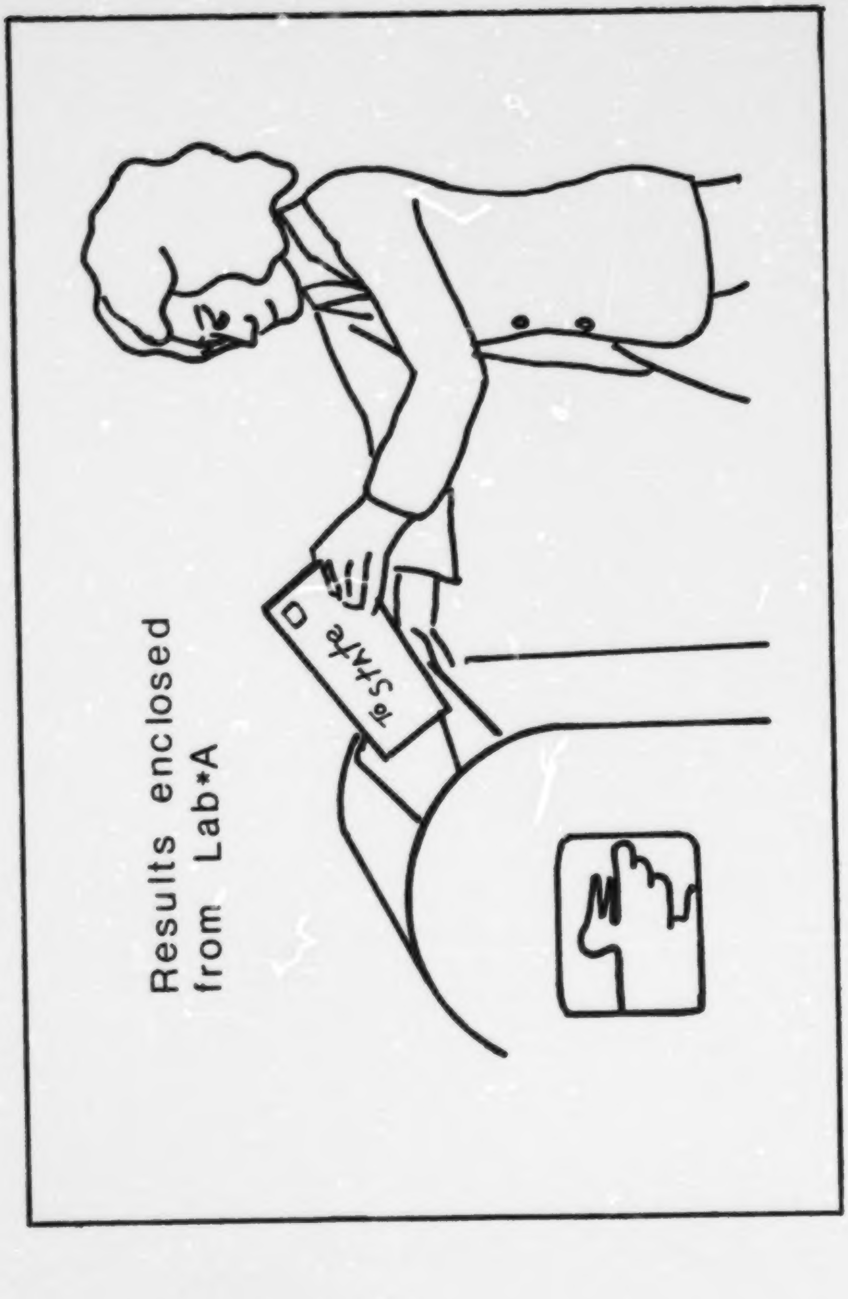

STATE
Variance Granted to PWS

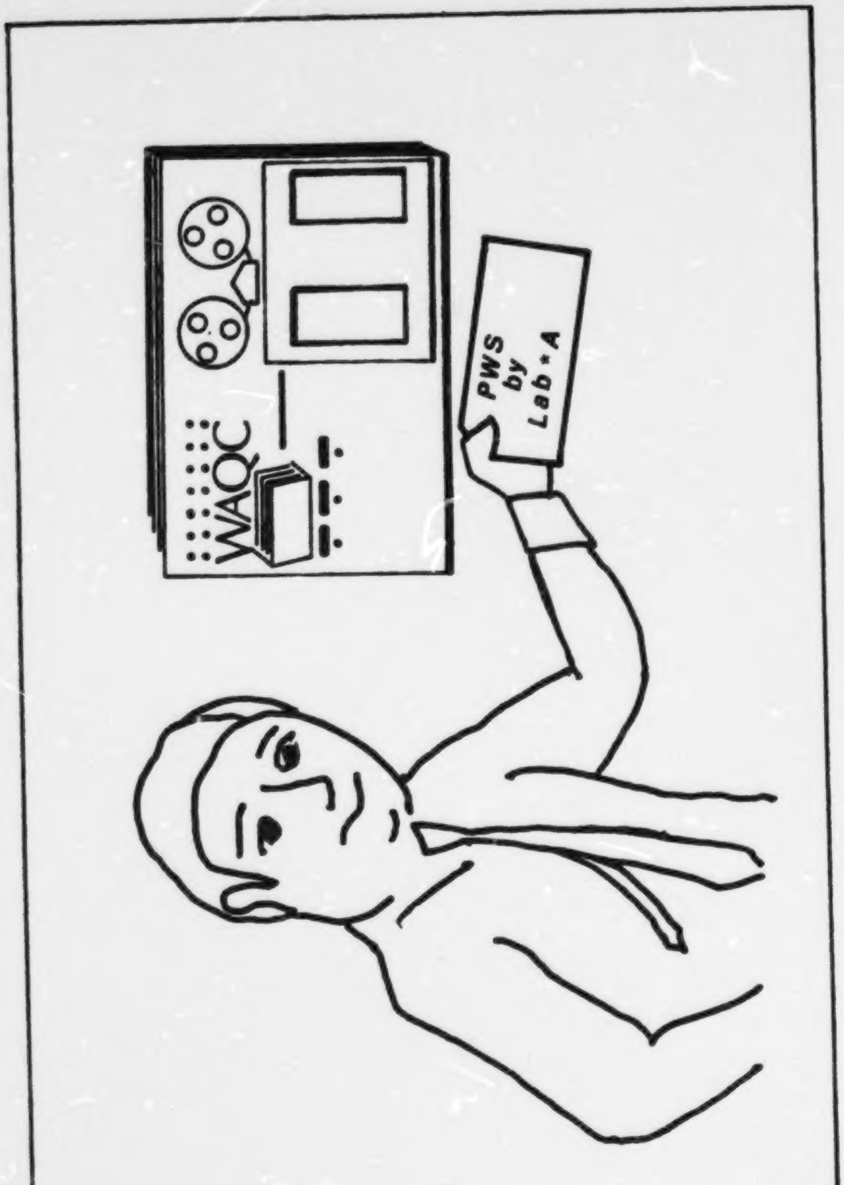

VAEX
Variance to PWS

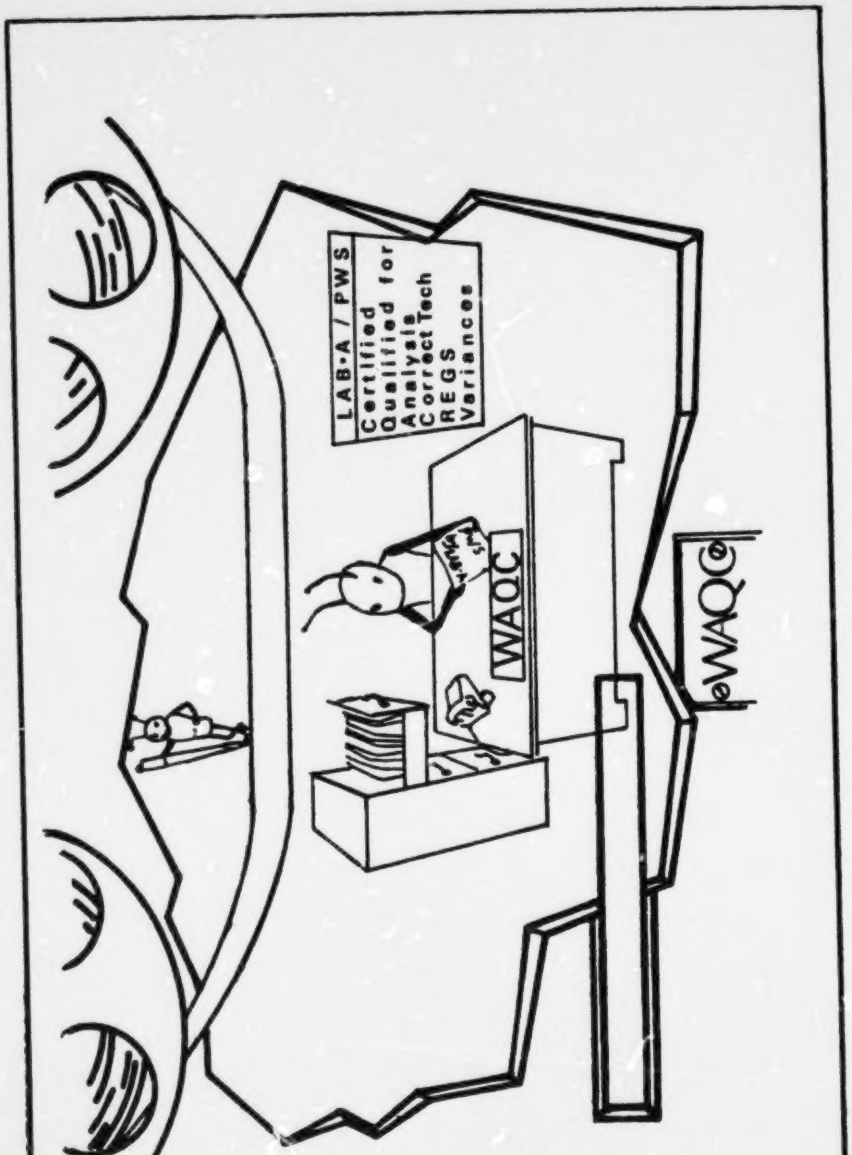

Variance Granted
PWSI
VAEX
VAEX

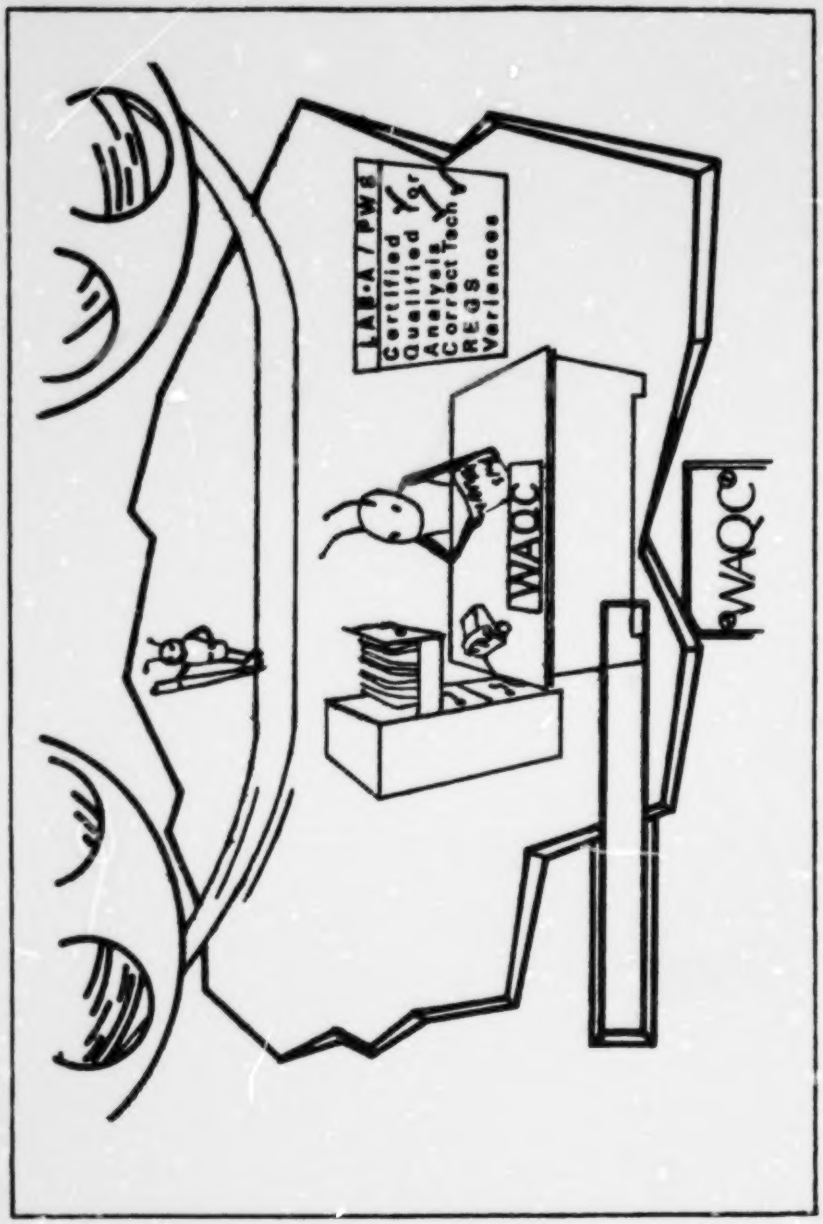

CALENDAR
to LAB·A

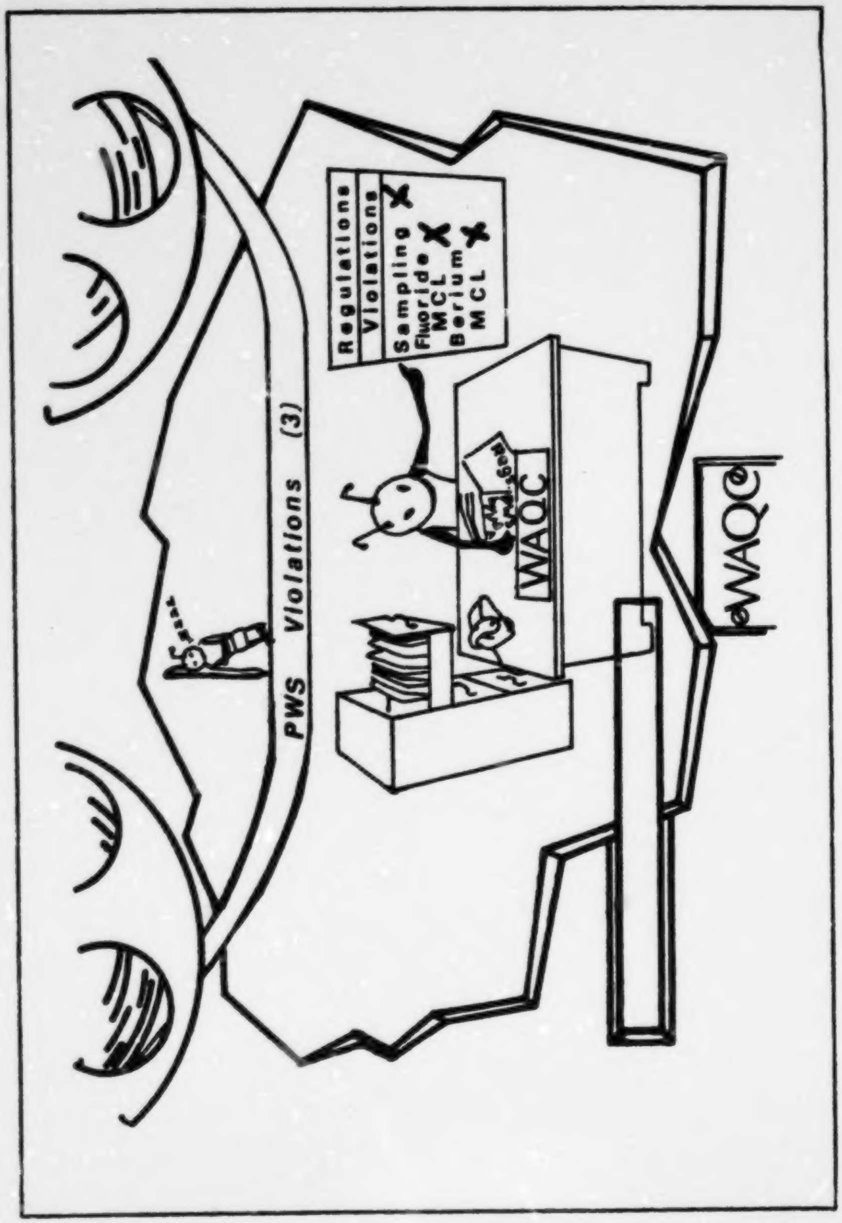

Certified
LAB•A
from
PWS

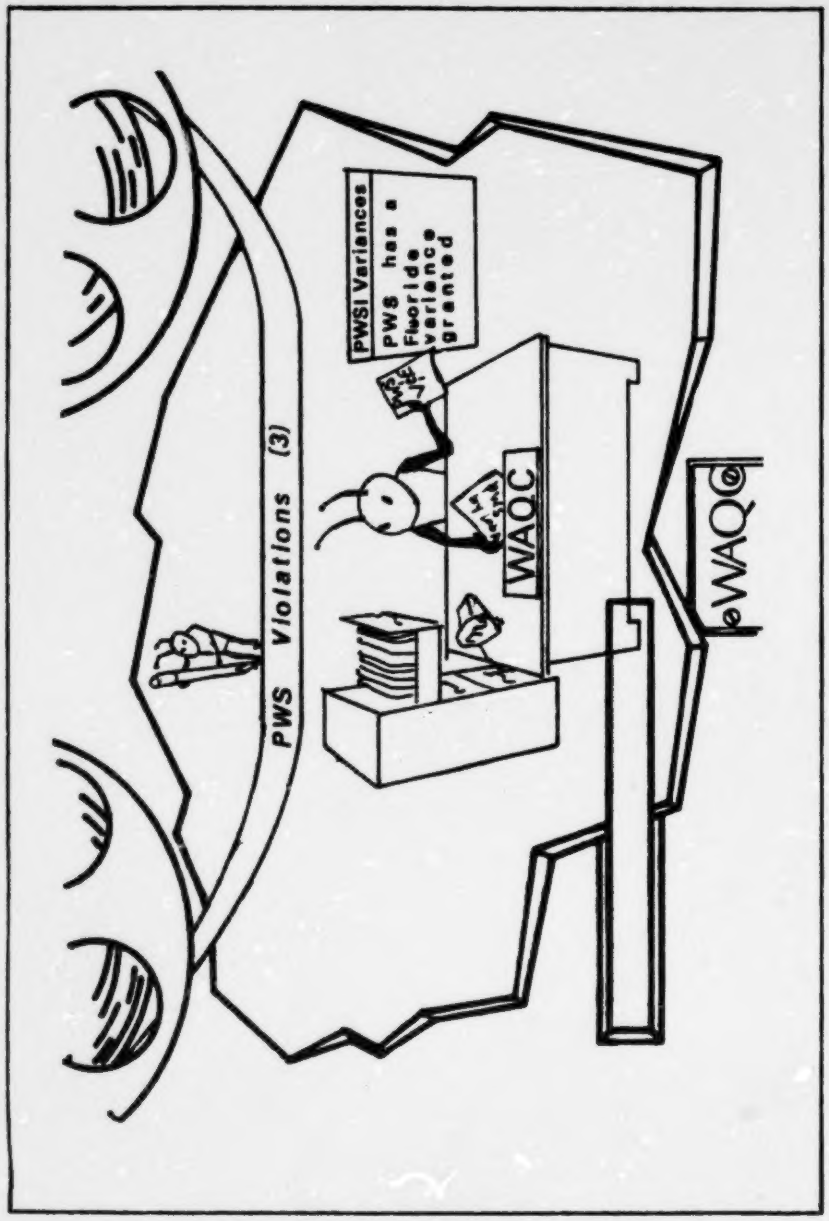

Results enclosed
from Lab*A
To State

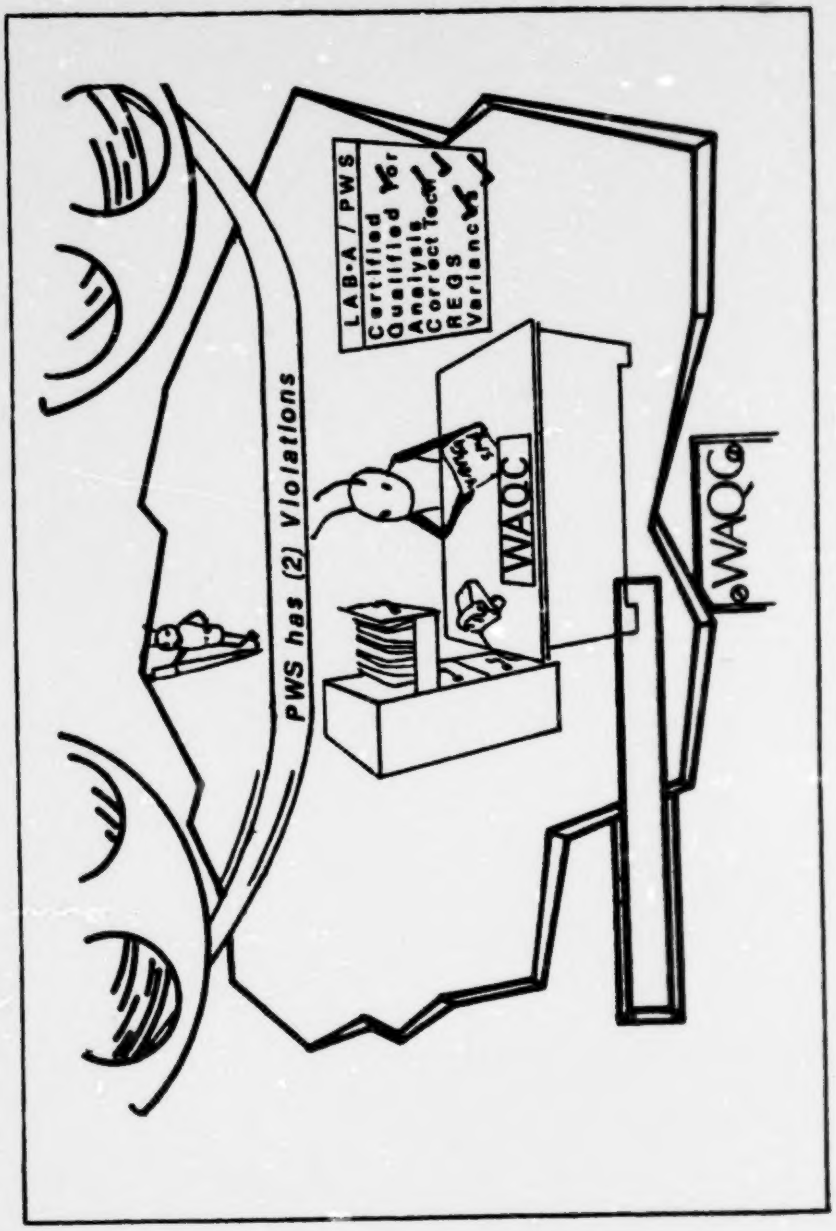

WAQC
PWS by Lab*A

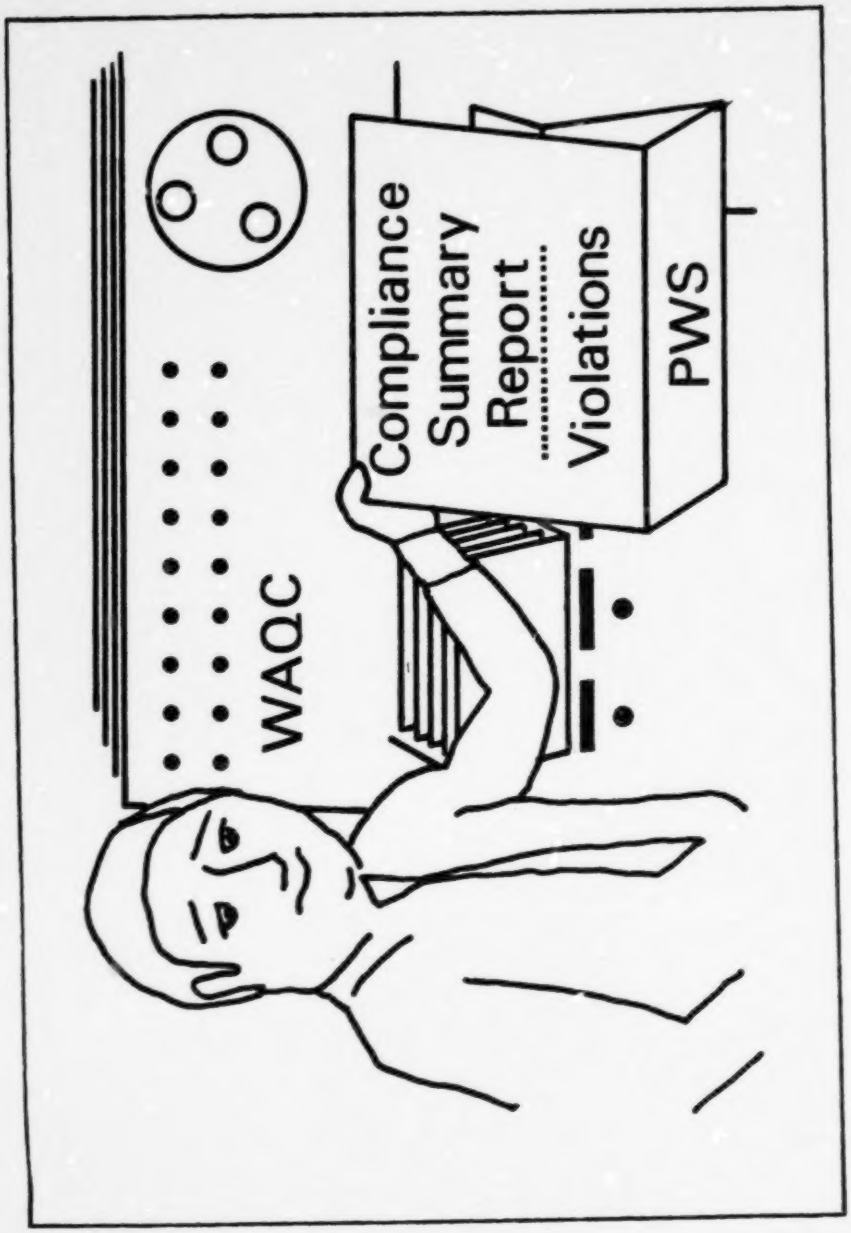

LAB·A / PWS
Certified
Qualified for
Analysis
Correct Tech
REGS
Variances
WAQC
WAQC

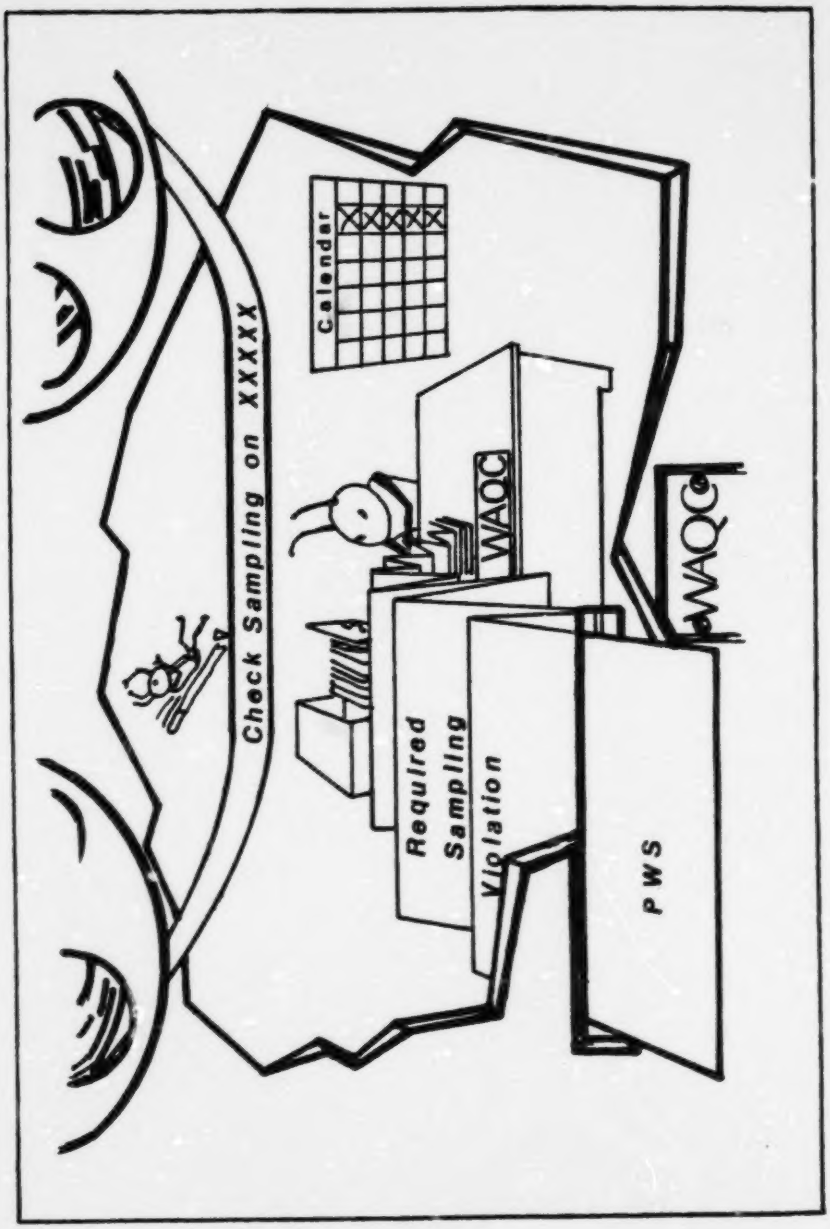

LAB-A / PWS
Certified
Qualified
Analysis
Correct Tech
REGS
Variances
WAQC
WAQC

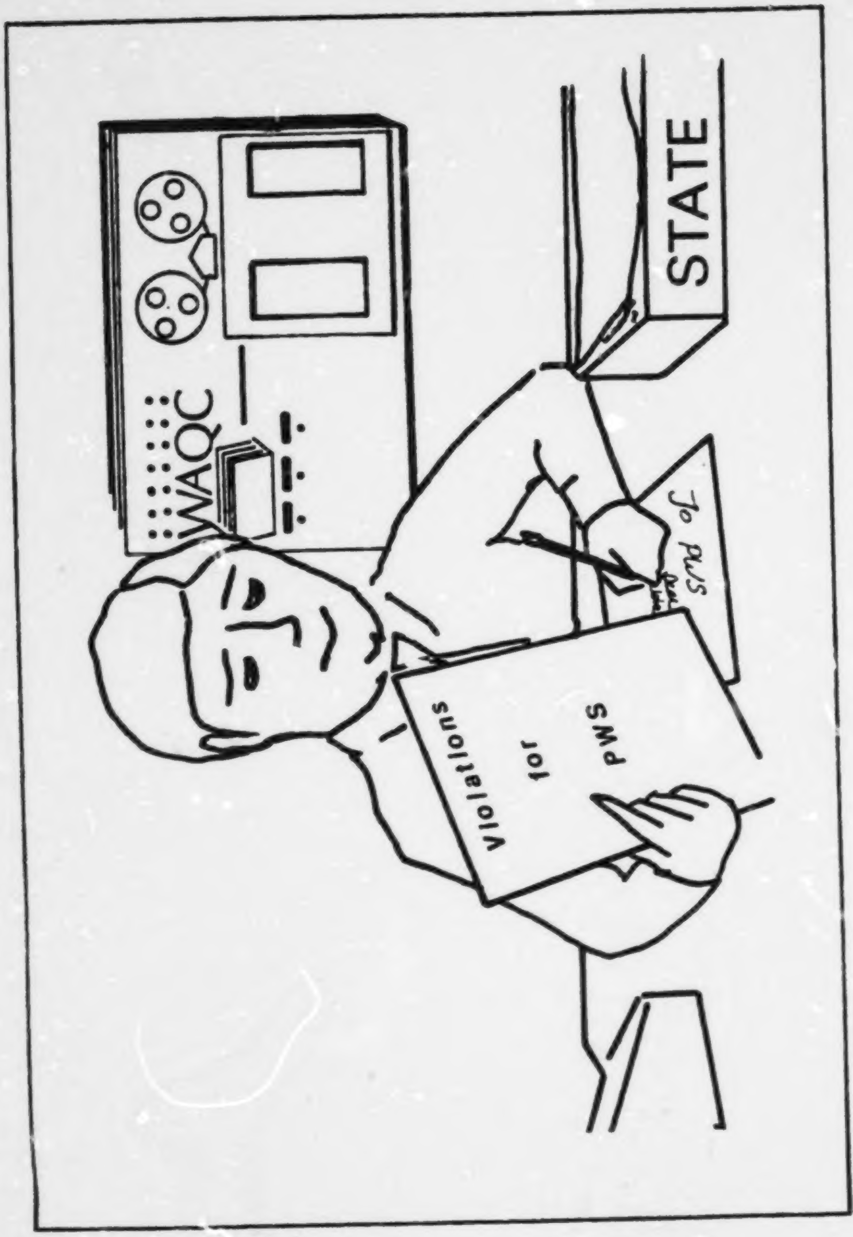

PWS Violations (3)
Regulations
Violations
Sampling X
Fluoride MCL X
Barium MCL X
WAQC
WAQC


PWS Violations (3)
PWSI Variances
PWS has a Fluoride variance granted
WAQC
WAQC

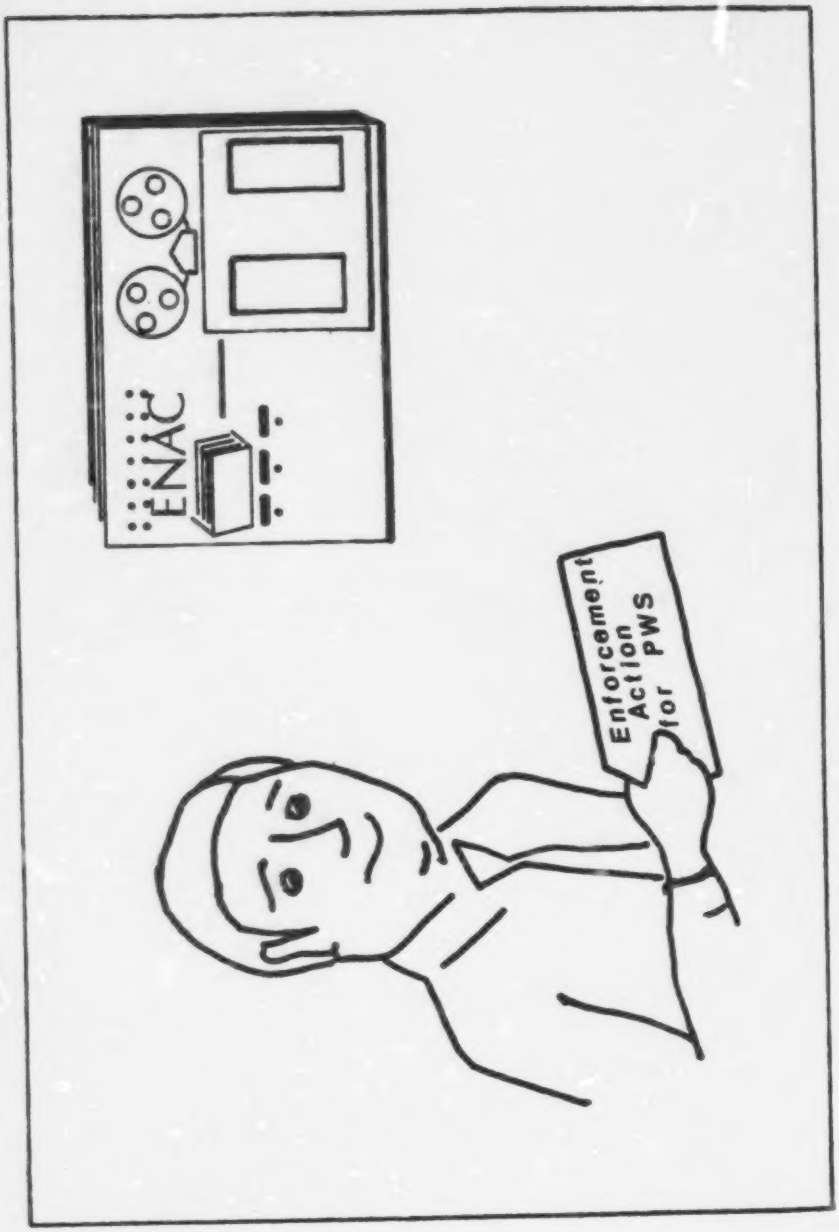

PWS has (2) Violations
LAB·A / PWS
Certified ✓
Qualified for ✓
Analysis
Correct Tech ✓
REGS ✓
Varianc ✓
WAQC
WAQG

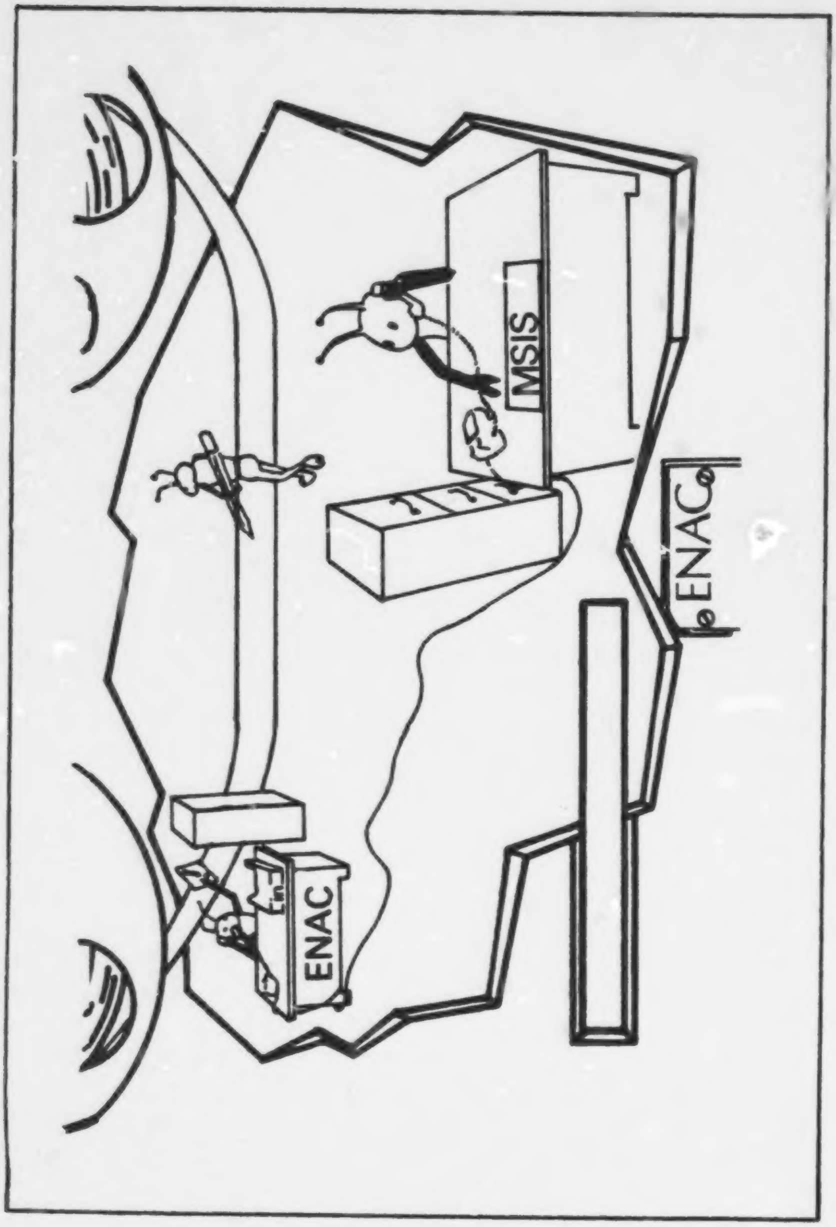

WAQC
Compliance
Summary
Report
Violations
PWS

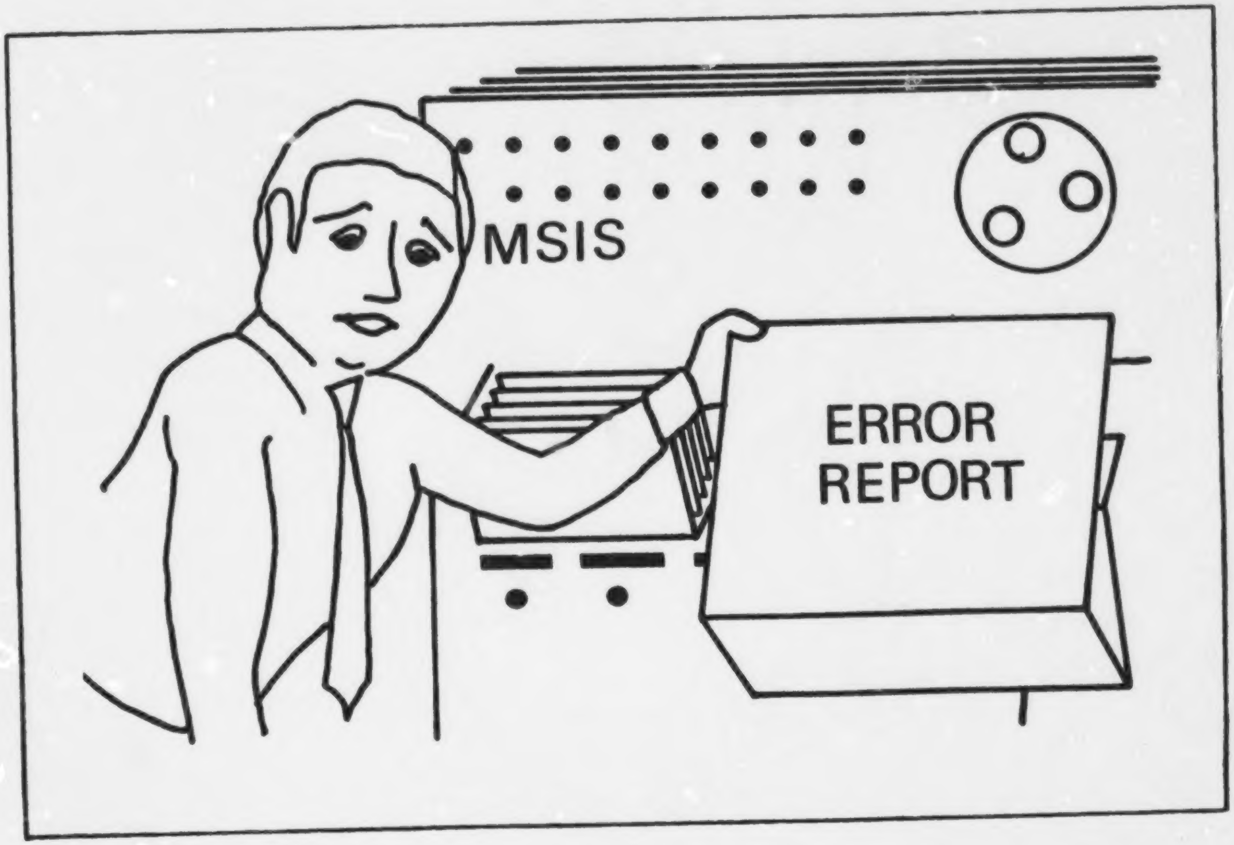

Check Sampling on XXXXX
Calendar
WAQC
WAQC
Required Sampling Violation
PWS

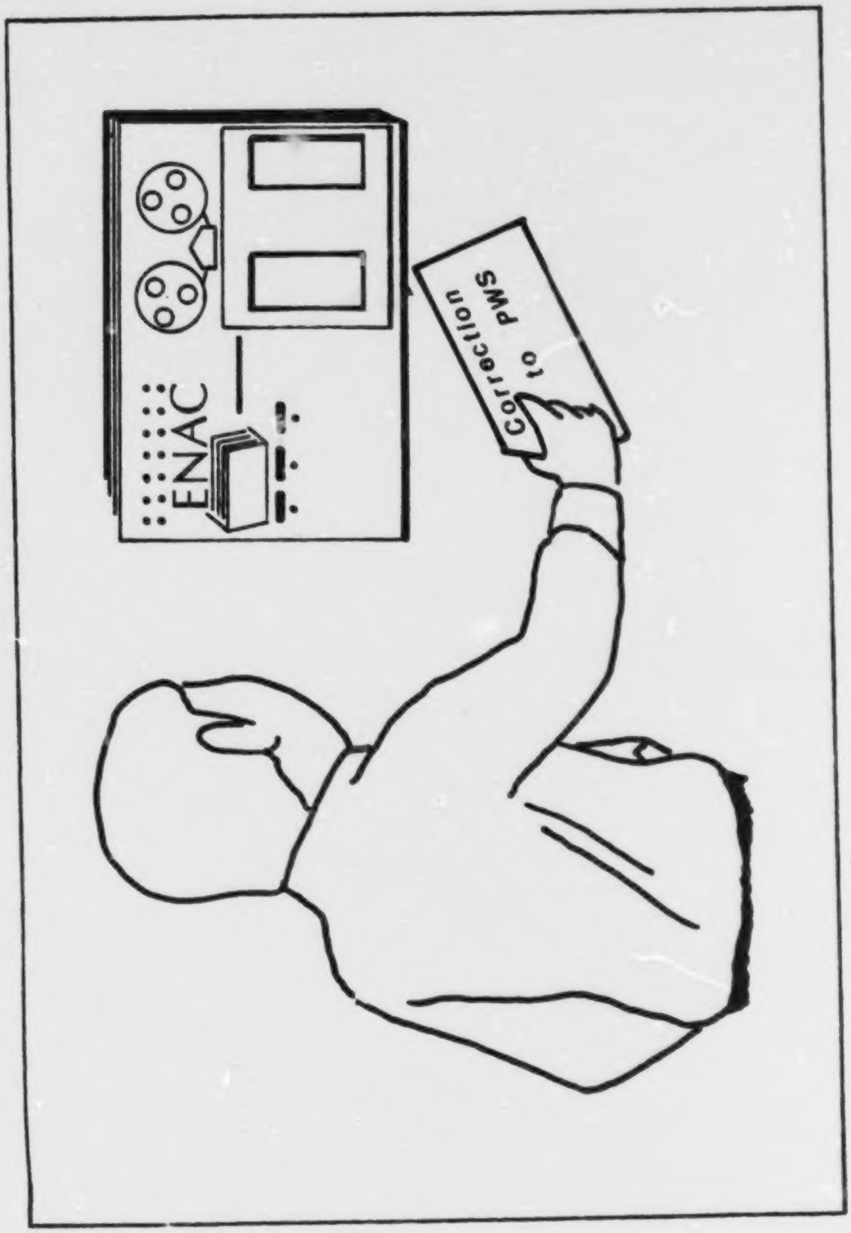

WAQC
STATE
To PWS
Violations for PWS

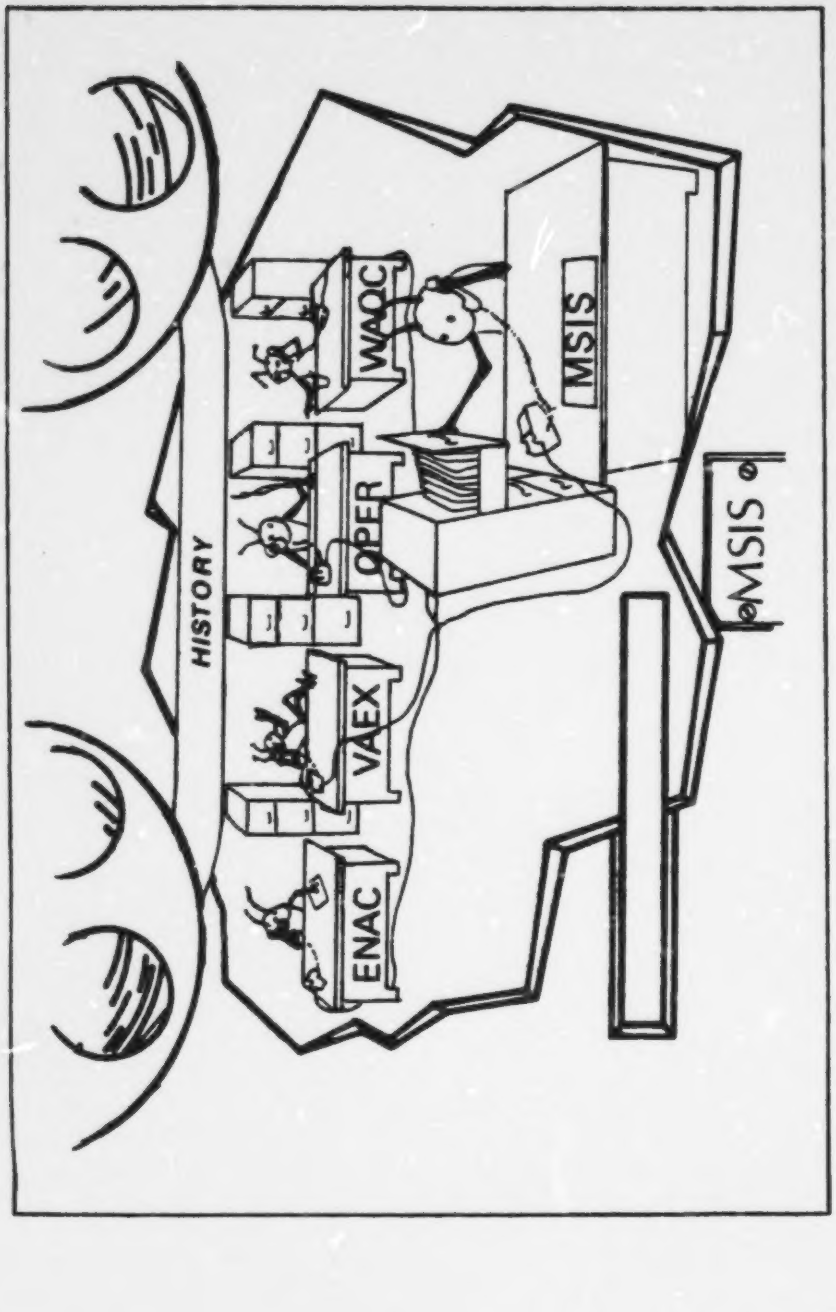
II.1.S23

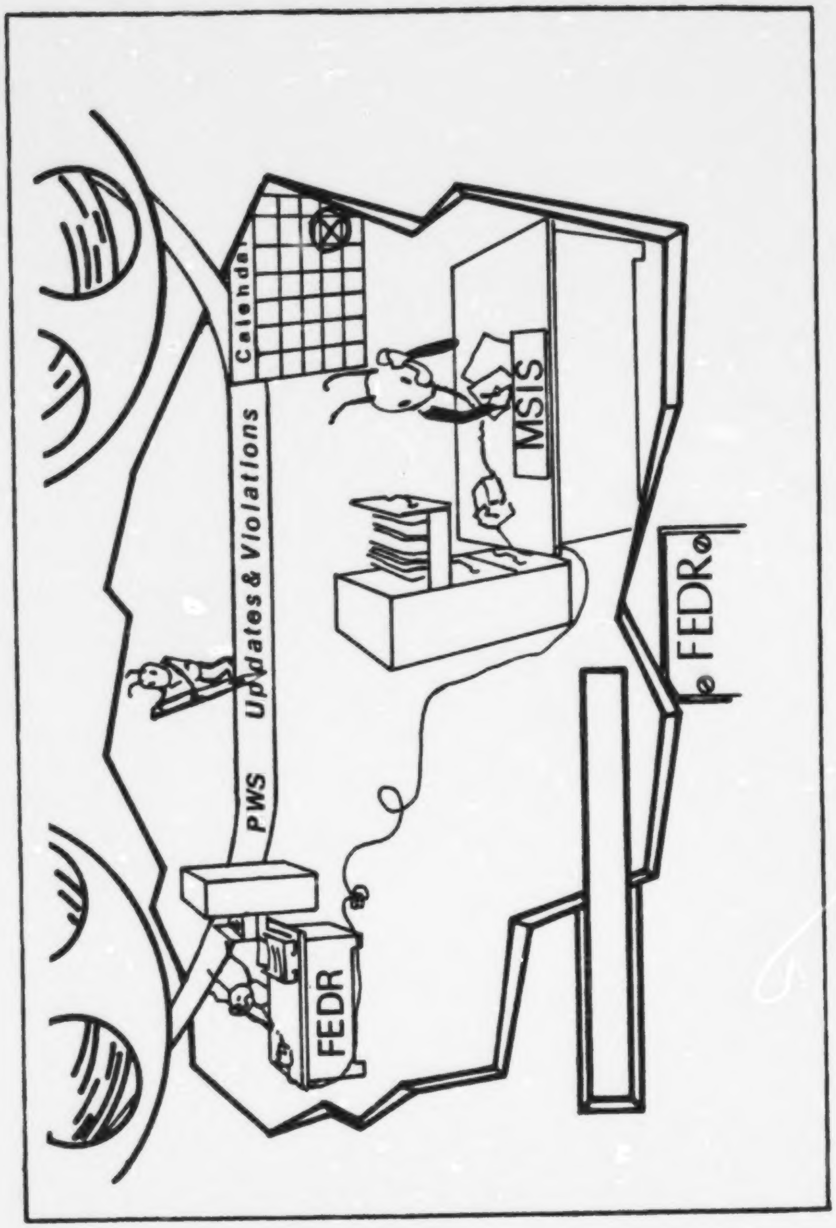

ENAC
Enforcement Action for PWS

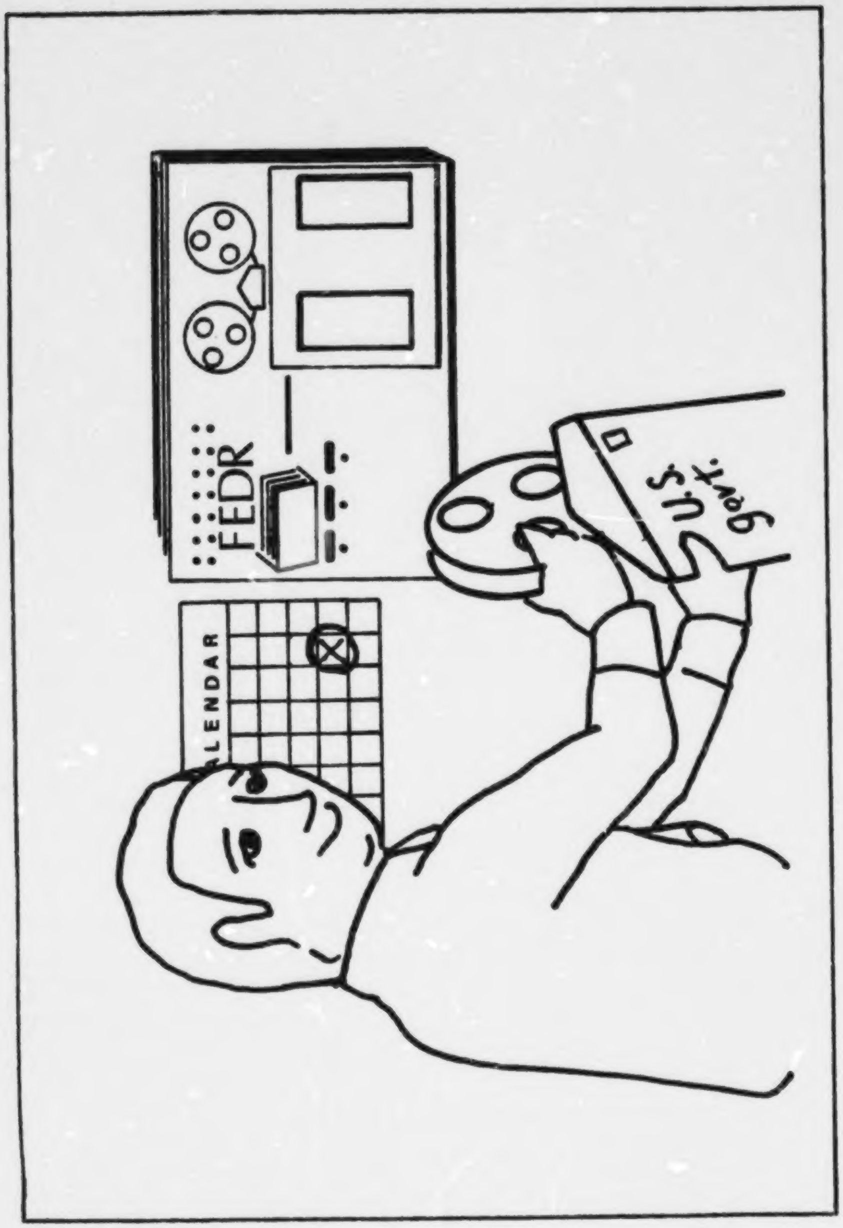

MSIS
ENAC
ENAC
in


MSIS
ERROR REPORT

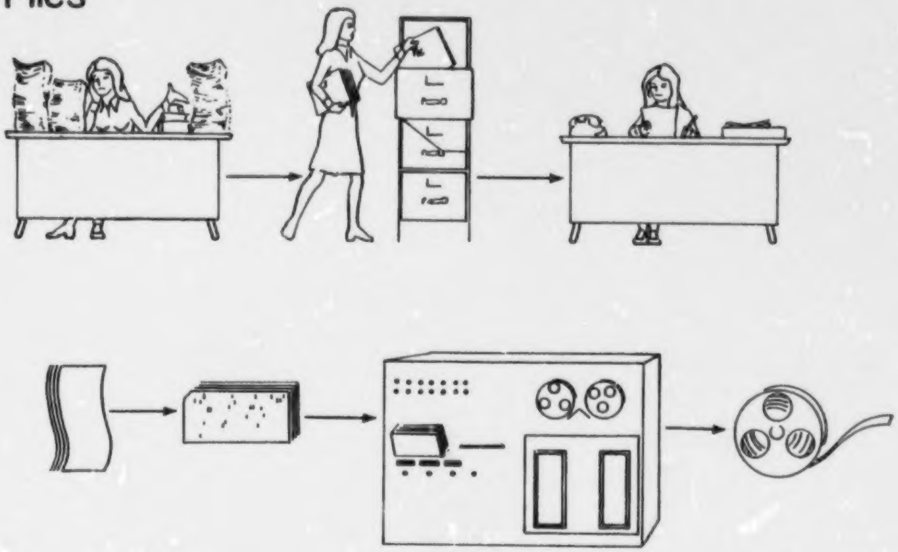

ENAC
Correction to PWS


HISTORY
WAOC
OPER
VAEX
ENAC
MSIS
MSIS


Calendar
PWS Updates & Violations
MSIS
FEDR
FEDR

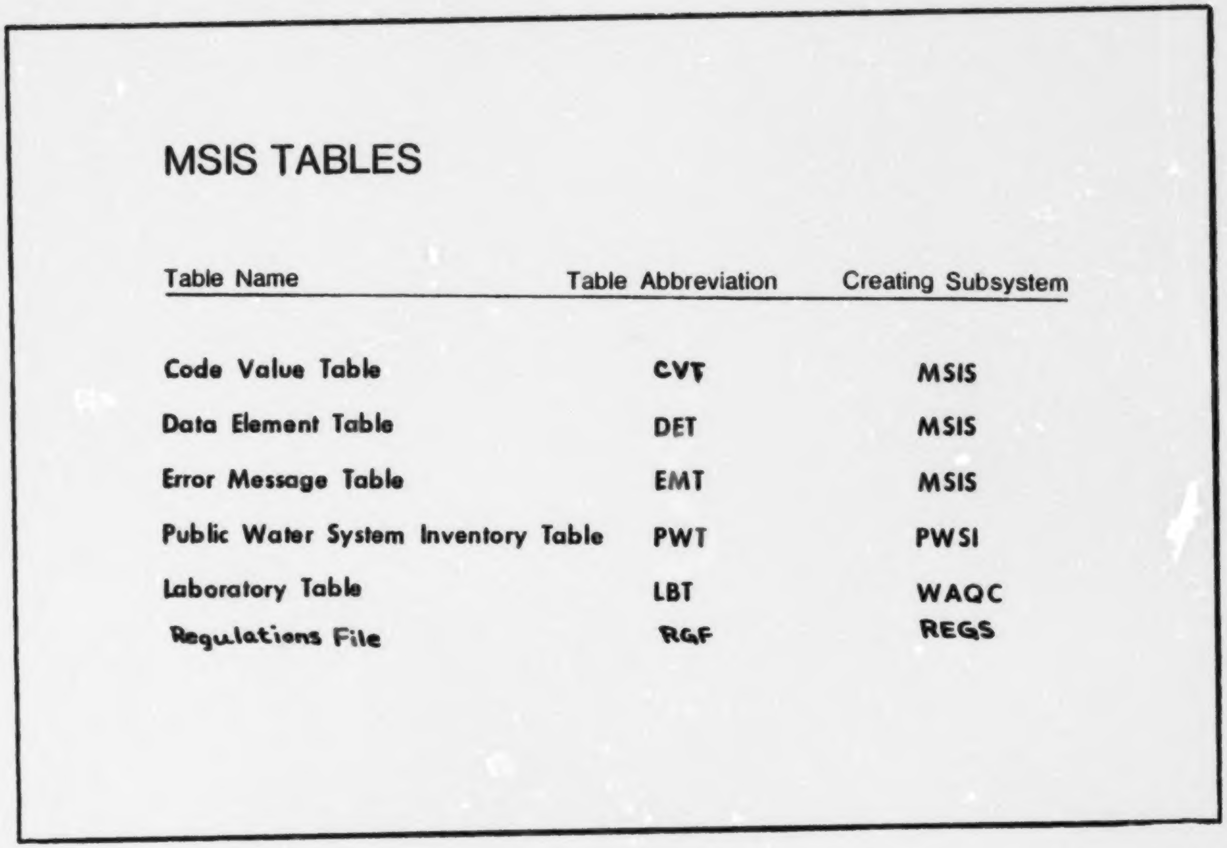

ALENDAR
FEDR
U.S. govt.

Files



MSIS Subsytem Permanent Files Maintained By
Update and Utilization

Files \ MSIS Subsystems	MSIS	REGS	PWSI	WAQC	FEDR	VAEX	ENAC	SRVY	OPER
PWF			M						
PSF				M					
SAF				M					
VIF				M					
SHF	M								
PHF			M						
DVF									
VEF						M			
EAF							M		
OMF									M



MSIS TABLES

Table Name	Table Abbreviation	Creating Subsystem
Code Value Table	CVT	MSIS
Data Element Table	DET	MSIS
Error Message Table	EMT	MSIS
Public Water System Inventory Table	PWT	PWSI
Laboratory Table	LBT	WAQC
Regulations File	RGF	REGS

Types of Input Forms

- Processing Options
- Table Creation
- Record Creation and Maintenance
- Water Quality Transactions

Processing Option Input Forms

PROC
SORT
SEL1 (Selection Criteria 1)
SEL2 (Selection Criteria 2)

Record Creation and Maintenance Forms

- Public Water System Inventory
- Variances and Exemptions
- Enforcement Actions
- Operator and Mailing

Water Quality Transactions Input Forms

- Sample Deletion Transactions
- Chemical or Radiological Analysis Input Transactions
- Bacterialogical or Turbidity Analysis Input Transactions
- Bacterialogical or Turbidity Summary Analysis Input Transaction

Output Reports

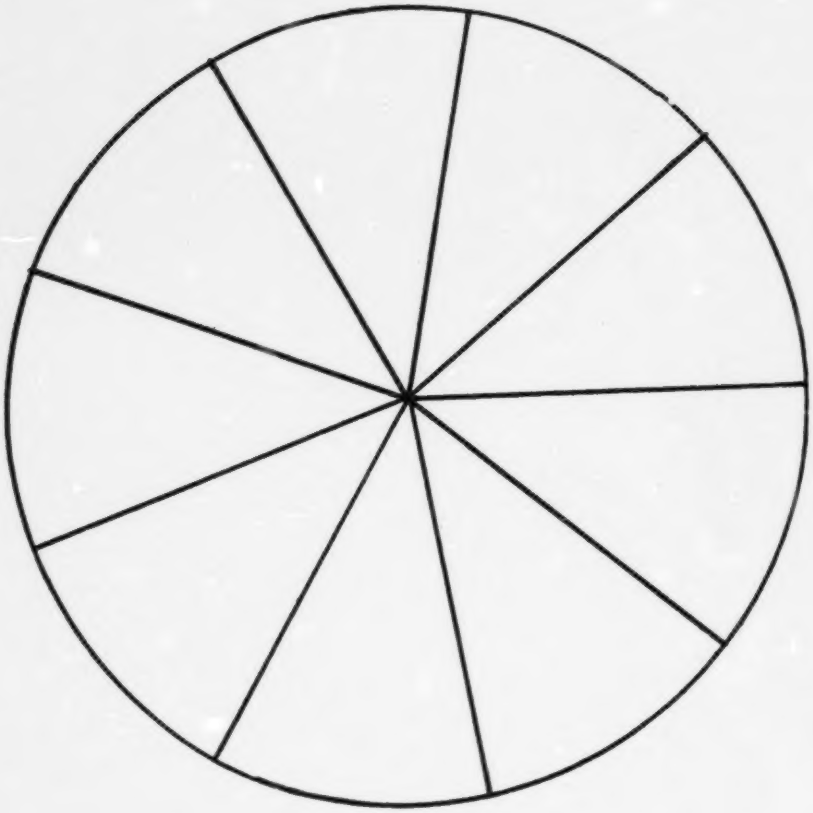
- Statistical
- Input
- Error
- Informational

Output Reports

- Regulations
- PWS Comprehensive Listing
- PWS Condensed Reports
- MSIS History Report
- Compliance Summary Report
- Chemical Sampling Schedule Reports

MSIS Subsystems

1. Name the nine MSIS subsystems, placing a name in each section of the circle.



MSIS Subsystems

Match the subsystems with their functions, by drawing lines.

Subsystems

PWS Inventory (PWSI)

Regulations (REGS)

Operator and Mailing (OPER)

Variances and Exemptions

Enforcement Actions (ENAC)

Sanitary Survey (SRVY)

Standard Processing (MSIS)

Federal Reporting (FEDR)

Water Quality Compliance (WAQC)

Functions

1. Gives the computer information to determine violations.
2. Maintains a list of certain distributors of water.
3. Selects public water systems that need a thorough examination.
4. Maintains the addresses of persons interested in water quality.
5. Maintains the information on PWSs that have special conditions.
6. Maintains information on the activities ensuring compliance.
7. Creates special files of interest to EPA.
8. Records samples, analyses, and violations.
9. Performs common functions among subsystems.

MSIS Files

1. List the files which contain various kinds of information on PWSs.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

2. List the files which contain information on water quality.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

3. List the files which contain information on the history of transactions.

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

______________________________ ______________________________

MSIS Tables

1. List the six tables.

____

____

____

____

____

____

2. Match the table with the subsystem that creates it.

REGS
PWSI
WAQC
FEDR
VAEX
ENAC
SRVY
OPER
MSIS

MSIS Tables

1. Name the table which performs the function stated.

    1. Allows the computer to inform the user of problems it encounters.

       ____

    2. Provides the computer with the information on what is acceptable for a particular field. ______________________________

    3. Supplies the computer with the location of particular information that is referred to by the user. ______________________________

    4. Supplies the computer with abbreviated information on Public Water Systems. ______________________

    5. Provides the computer with the information on acceptable analyzers of sample data. ______________________________

    6. Provides the computer with the information necessary to determine MCL and sampling violations and to set up sampling schedules.

       ____

II.2.E1

Input Forms

1. List the four input form categories.

2. Specify two input forms per category.

Output Reports

1. Specify the kind of output report that will supply the information to answer the question.
   1. How many PWSs on my Public Water File (PWF)? ____________
   2. Is the MCL for arsenic on the RGF correct? ____________
   3. Why didn't I get the report I requested? ____________
   4. What violations occurred last month? ____________
   5. Who should be sending in sample analyses? ____________
   6. What are the acceptable values for "Operator Type"? ____________
   7. What was the percentage increase in our mailing list? ____________
   8. What data do I need to complete the VEF for the last update? ______

      ____

2. Which kind of report is probably the most important to the user?

   ____

3. State the special characteristic of the reports prepared by the FEDR subsystem for submission to the federal government. ____________

   ____

   ____

User's Manual

List by subsystem all the possible informational reports that may be produced using MSIS.

Subsystem	Informational Reports

II.3.E1

Subsystem   Informational Reports

User's Manual

Prepare the appropriate input forms to select all Public Water Systems that are required by the federal regulations to monitor man-made racioactivity, i.e., all community PWSs using surface water sources and serving more than 100,000 persons. At the same time select all public water systems that are required to perform quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium, i.e., all community PWSs utilizing waters contaminated by effluents from nuclear facilities.

PWS1020,080 PWS1.107

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	☐☐☐☐☐☐☐☐☐☐ 5-14	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ 15-29	☐☐ 30-31
DUP 1 - 4	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

PWS1020.080 PWS1.108

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

II.3.E2

PWSI020.000 PWSI.108

MODEL STATE INFORMATION SYSTEM
PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

II.3.E2

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 11/16 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** Yes	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 183	**MNEMONIC NAME:** PW-PL-POPL	**PROGRAM NAME:** PWF-PLANT-POPULATION-SERVED

DESCRIPTION AND USE: Represents the total population obtaining water from the Public Water System.	**DATA TYPE:** A/N **PICTURE:** X(9)

SOURCE(S): Input form

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

Any numeric

EDIT CRITERIA:

For updates, may be blank
When creating a new record, must be entered - error code 004
When creating a new record, must be numeric - error code 010
If entered on an update, must be numeric - error code 401
If entered, should not exceed 20000000 - error code 101

ADDITIONAL COMMENTS:

Does not include the population of consecutive water systems unless requested by the State (see Section 141.29 of the National Interim Primary Drinking Water Regulation, Part IV).

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 11/16 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** Yes	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 244	**MNEMONIC NAME:** PW-PL-SOCO	**PROGRAM NAME:** PWF-PLANT-SOURCE-CODE

DESCRIPTION AND USE:
Represents a code identifying the type of water source.

DATA TYPE: A/N

PICTURE: X(1)

SOURCE(S): Input form

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

S = Surface Water
G = Ground Water
P = Purchased Water (originating surface source)
W = Purchased Water (originating ground source)

EDIT CRITERIA:

If entered, must be 'S', 'G', 'P' or 'W' - error code 011.

When adding a water source, must be entered - error code 004.

ADDITIONAL COMMENTS:
If any water source has a code of 'S' or 'P', the entire Public Water System is classified as using surface water.

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 11/16 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** Yes	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 182

MNEMONIC NAME: PW-PL-TYPE

PROGRAM NAME: PWF-PLANT-TYPE

DESCRIPTION AND USE:
Represents a flag indicating if a PWS is a community or non-community PWS.

DATA TYPE: A/N

PICTURE: X(1)

SOURCE(S): Input form

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

'C' = Community

'N' = Non-community

EDIT CRITERIA:

When creating a new record, must be 'C' or 'N' - error code 011 and must be entered - error code 004

For updates, may be blank.

ADDITIONAL COMMENTS:
For a complete definition of community vs non-community PWS, refer to Section 141.2 of the National Interim Primary Drinking Water Regulations, Part IV.

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 11/16 1976	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** No

DATA ELEMENT

CATALOGUE NO.: 222	**MNEMONIC NAME:** PW-S-NUCL	**PROGRAM NAME:** PWF-STATE-NUCLEAR-FACILITY

DESCRIPTION AND USE: Represents a flag indicating whether the Public Water System is contaminated by effluents from a nuclear facility.	**DATA TYPE:** A/N **PICTURE:** X(1)

SOURCE(S): Input form

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:	X		X	X			X		
OUTPUT OF:	X			X					

ACCEPTABLE VALUES:

Y = Yes, contaminated by a nuclear facility

N = No, not contaminated by a nuclear facility

EDIT CRITERIA:

If entered, must be 'Y', 'N' - error code 407. Default to 'N'.

When reinitializing this field ($), reinitialize to 'N'.

ADDITIONAL COMMENTS:

See Section 141.26(b)(4) of the National Interim Primary Drinking Water Regulations, Part II.

User's Manual

List the Standard Error Message you would expect from each of the entries on the following SORT form. (List only one error message per incorrect entry. If an entry will not produce an error message, leave the answer blank empty.)

User's Manual

Page 1

Position

Standard Error Message (if any)

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20-29

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User's Manual

Page 2

Position	Standard Error Message (if any)
5-6	
7-16	
17	
18-19	
20-29	
30	
31-32	
33-42	
43	
44-45	
46-55	
56	
57-58	
59-68	
69	

MSIS040 MSIS.108

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM
STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ____________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	1 5-6	SH-RECORD 7-16	D 17	A=ASCENDING D=DESCENDING
	02 18-19	SH FILE ID 20-29	D 30	A=ASCENDING D=DESCENDING
	03 31-32	SH-REC-ID 33-42	A 43	A=ASCENDING D=DESCENDING
	05 44-45	SHDECODE 46-55	A 56	A=ASCENDING D=DESCENDING
	06 57-58	SH-CUR-UP 59-68	A 69	A=ASCENDING D=DESCENDING

II.3.E3

PREPARED BY ______________________ DATE ___/___/___

APPROVED BY ______________________ DATE ___/___/___

MSIS040 MSIS.108

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM
STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ________________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	06 5-6	SH-LST-UP 7-16	☐ 17	A=ASCENDING D=DESCENDING
	08 18-19	SH-OLD-VAL 20-29	D 30	A=ASCENDING D=DESCENDING
	07 31-32	SH-NEW-VAL 33-42	D 43	A=ASCENDING D=DESCENDING
	10 44-45	TYPE 46-55	A 56	A=ASCENDING D=DESCENDING
	11 57-58	PW-ID 59-68	D 69	A=ASCENDING D=DESCENDING

PREPARED BY ______________________________ DATE __/__/__

APPROVED BY ______________________________ DATE __/__/__

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
10-5-76	1	No	Yes

DATA ELEMENT

CATALOGUE NO.: 301	MNEMONIC NAME:	PROGRAM NAME: SHF-FILE-ID
DESCRIPTION AND USE: These codes are part of the access key for a Standard History Record. They indicate from which file a History record originated.		DATA TYPE: A/N PICTURE: X(2)
SOURCE(S): Internally Generated		

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

VI - Violations File
VE - Variances and Exemptions File
EA - Enforcement Actions File
OM - Operator and Mailing File

EDIT CRITERIA:

None

ADDITIONAL COMMENTS: These codes are internally generated in the system and should never be incorrect.

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 10-5-76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 302

MNEMONIC NAME:

PROGRAM NAME: SHF-RECORD-ID

DESCRIPTION AND USE: Record identification is part of the access key on the Standard History File. It is the unique record identification from the originating record.

DATA TYPE: A/N

PICTURE: X(5)

SOURCE(S): Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAOC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

The record identification that was on the original MSIS record.

For Violations - Violation ID
For Variances and Exemptions - V or E ID
For Enforcement Actions - Case ID
For Operator and Mailing - Addressee ID

EDIT CRITERIA:

None.

ADDITIONAL COMMENTS:

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
10-5-76	1	No	Yes

DATA ELEMENT

CATALOGUE NO.:	MNEMONIC NAME:	PROGRAM NAME:
303		SHF-DATA-ELEMENT-CODE

DESCRIPTION AND USE:

A numeric code identifying an MSIS data element.

DATA TYPE: A/N

PICTURE: X(3)

SOURCE(S):

Internally generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

Data element catalogue number specified in the Data Element Dictionary pertaining to the Violations File, the Variances and Exemptions File, the Enforcement Actions File, and the Operatór and Mailing File.

EDIT CRITERIA:

None

ADDITIONAL COMMENTS:

These codes are assigned internally and should never be incorrect.

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE:	VERSION:	REQUESTED BY EPA TO BE REPORTED ANNUALLY:	MANDATED FOR MSIS PROCESSING REQUIREMENTS:
10-5-76	1	No	Yes

DATA ELEMENT

CATALOGUE NO.:	MNEMONIC NAME:	PROGRAM NAME:
304		SHF-CUR-UPDATE-DATE

DESCRIPTION AND USE: This is the date an MSIS record was updated. It is used on the MSIS History file to identify changed data elements according to the date of the change.

DATA TYPE: N

PICTURE: 9(5)

SOURCE(S): Internally generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

A numeric date in Julian format.

EDIT CRITERIA:

None.

ADDITIONAL COMMENTS: This date is internally generated in the system and should never be incorrect.

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 10-5-76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 305

MNEMONIC NAME: SH-LST-UP

PROGRAM NAME: SHF-LAST-UPDATE-DATE

DESCRIPTION AND USE: This is the date on which the record was previously updated. (Prior to the current update) this is used to establish an audit trail.

DATA TYPE: N

PICTURE: 9(5)

SOURCE(S): Internally generated

SUBSYSTEMS:	**PWSI**	**REGS**	**WAQC**	**FEDR**	**VAEX**	**ENAC**	**SRVY**	**OPER**	**MSIS**
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

Numeric date in Julian format.

EDIT CRITERIA:

None.

ADDITIONAL COMMENTS: This date is internally generated in the system and should never be incorrect. The date contained in the indicated the most previous date on which the source record was changed. (The date of change prior to this update).

MODEL STATE INFORMATION SYSTEM

DATA ELEMENT DESCRIPTION

DATE: 10-5-76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 306	**MNEMONIC NAME:** SH-OLD-VALUE	**PROGRAM NAME:** SHF-OLD-VALUE

DESCRIPTION AND USE: This is the value of the data element on an MSIS record before an update transaction changed its value. It is used in the Standard History file for an audit trail.	**DATA TYPE:** A/N **PICTURE:** X(30)

SOURCE(S): Internally generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									X
OUTPUT OF:			X		X	X		X	X

ACCEPTABLE VALUES:

Any alphanumeric character string

EDIT CRITERIA:

None.

ADDITIONAL COMMENTS:

MODEL STATE INFORMATION SYSTEM
DATA ELEMENT DESCRIPTION

DATE: 10-5-76	**VERSION:** 1	**REQUESTED BY EPA TO BE REPORTED ANNUALLY:** No	**MANDATED FOR MSIS PROCESSING REQUIREMENTS:** Yes

DATA ELEMENT

CATALOGUE NO.: 307	**MNEMONIC NAME:** SH-NEW-VAL	**PROGRAM NAME:** SHF-NEW-VALUE

DESCRIPTION AND USE: This is the value of a data element on an MSIS record after an update transaction changed its value. It is used in the Standard History File for an audit trail.	**DATA TYPE:** A/N **PICTURE:** X(30)

SOURCE(S):

Internally generated

SUBSYSTEMS:	PWSI	REGS	WAQC	FEDR	VAEX	ENAC	SRVY	OPER	MSIS
INPUT TO:									X
OUTPUT OF:			X		X	X		X	

ACCEPTABLE VALUES:

Any alphanumeric character string

EDIT CRITERIA:

None.

ADDITIONAL COMMENTS:

II.2.T1
22T1
(1-4)

POST-TEST

MSIS SUBSYSTEMS

Name: ______________________________ (5-30)
Postal Code ______ (31-2)
Date ____/____/____ Month Day Year (33-8)

1. Circle the purpose of the Safe Drinking Water Act:

   (39) a. Monitor drinking water quality
   (40) b. Report to the federal government drinking water quality
   (41) c. Assure the public is provided with safe drinking water

2. Circle the three phrases which describe a batch computer system:

   (42) a. On-line
   (43) b. Accumulates data
   (44) c. Instantaneous sending of data
   (45) d. Keypunch cards
   (46) e. After-the-fact

3. How many subsystems does MSIS have? (47)______________________________

4. Match the types of input forms with their function:
   (More than one function may be appropriate)

Form	Function
a. Processing option	(48) ___ Enter data to MSIS tables
b. Table creation	(49) ___ Enters PWS-related data to files
c. Record creation & maintenance	(50) ___ Enters sample and analysis data
d. Water quality transactions	(51) ___ Enables the user to specify needed reports
	(52) ___ Enables the user to specify needed PWS listing

5. Circle the correct answer. REGS, MSIS, and SRVY subsystems do not have record creation and maintenance forms because:

   (53) a. they don't have any files
   (54) b. they only print reports
   (55) c. they don't maintain PWS data

6. Match the four kinds of output reports with the type of information each supplies:

Report

a. statistical
b. error
c. input
d. informational

Information

(56) ____What violations occurred yesterday
(57) ____Number of PWSs on the Public Water File
(58) ____What violations occurred last month
(59) ____Is the MCL for arsenic on the Regulations File correct?
(60) ____Why didn't I get the report I requested?

7. Match each subsystem with its appropriate function:

Subsystem

a. Regulations
b. Enforcement Actions
c. Water Quality Compliance
d. Public Water System Inventory
e. Variances & Exemptions
f. Standard Processing

Function

(61) ____Automatically translates the PWS Inventory File into MSIS format
(62) ____Maintains data on PWS's having special conditions
(63) ____Checks analyses of water quality to see if authorized methods were used
(64) ____Performs common functions for other subsystems
(65) ____Contains the criteria used to determine violations
(66) ____Keeps information on compliance actions

8. Circle T (True) or F (False) for the following statements:

T F (67) MSIS is a subsystem name as well as the system name.

T F (68) There are ten subsystems in MSIS.

T F (69) FEDR creates printed reports for the federal government.

T F (70) A summary of State enforcement actions is reported annually.

T F (71) Tables and files are both accessible to the user for selecting reports.

T F (72) Water quality transaction input forms are used to enter analytical results.

T F (73) Any laboratory may submit analysis results.

9. Rate your current level of knowledge about MSIS:

(74) None
(75) A little
(76) Some
(77) Quite a bit
(78) A great deal

GLOSSARY

Terms are included in this glossary _only_ if their meanings differ from those found in a standard English language dictionary.

Analysis:

The separation of any abstract entity or material into its constituant elements, such as chemical-intentionally produced decomposition or separation of materials into their ingredients to find their kind or quality.

Analysis Method:

The method or technique utilized to obtain analysis results.

Analytical Techniques:

The methods used to determine the components of a substance, especially raw water.

Batch Processing:

A procedure in which a number of transactions, for example on keypunched cards, are accumulated before being processed together.

Check Sampling:

The act of acquiring additional quantities of water for analysis over and above the regular samples due to the suspicion of violating maximum contaminant levels.

Code:

A system used for brevity of communication in which arbitrarily chosen words, letters, or symbols are assigned definite meanings.

Computer:

A machine which accepts input data, processes it, and gives output data.

Computer Program:

A sequence of computer-readable instructions used in conjunction with appropriate data to perform specified logical tasks.

Correction:

Additions, subtractions, or changes to a computer file.

Course:

All content taught in one individual MSIS training program volume. A course is subdivided into units.

Data:

Raw facts or statistics which alone have little or no meaning, but as a group allow some meaningful relationships to be drawn.

Data Element:

An identifiable item of information within a record. See the Data Element Dictionary for all data elements used in MSIS.

Data Processing:

The act of manipulating information to obtain a desired result, especially with the use of a computer.

Economical:

Of or pertaining to the financial reasons for granting variances and exemptions.

Enforcement:

The act of creating and maintaining compliance using coercive methods.

Enforcement Action:

An act intended to generate compliance.

Exemption:

Authorized waiver of an MCL requirement due to compelling factors, such as need for a PWS to design and build effective treatment facilities.

Field:

See data element.

File:

A collection of records systematically arranged to facilitate quick reference; may be stored on magnetic tape or magnetic disc.

Goal:

A general achievement toward which effort is directed.

Gross Alpha:

A group of substances which emit Alpha particle radiation.

Gross Beta:

A group of substances which emit Beta particle radiation.

Hardware:

The physical equipment in a data processing system (contrasted with software).

Information:

Data that has been processed to obtain specific results which increase knowledge of the recipient and is used as the basis for decision making.

Inorganic:

Of or pertaining to substances that are not hydrocarbons or their derivatives.

Input:

Information which is specially prepared for acceptance by computer programs. Usually written down on special forms, then put into machine-readable form by, for example, keypunching.

Integrity:

Presumed reliability of data.

Internal:

Data processing occurring within the computer automatically according to instructions from computer programs.

Inventory:

A detailed, descriptive list, for example, of Public Water Systems.

Magnetic Disc:

A device which stores data on the magnetizable surfaces of one or more rotating discs, which look like a stack of phonograph records.

Magnetic tape:

A device which stores data on the magnetizable surface of a long strip of tape (the tape is typically 1 inch wide and 2400 feet long).

Maintain:

Actions taken to ensure up-to-date computer files.

Management Information System:

An organized method of maintaining facts pertinent to the governing of the operations of an organization.

Model State Information System:

(MSIS) a batch computer system designed to (1) maintain records on public water systems and the quality of the water they supply, and (2) prepare reports.

Monitor:

The acts of (1) a PWS observing and checking water quality or (2) a State observing and checking PWSs.

National Inventory File:

A computerized list of many public water systems in the United States; previously used to monitor water quality.

Objective:

A specific achievement that efforts are intended to attain.

Online Processing:

A procedure for inputting data computer whenever needed for immediate data processing, often by typewriter terminal.

Operator:

One who runs a public water system.

Organic:

Of or pertaining to substances that are hydrocarbons or their derivatives.

Output:

Any information passed from the computer.

Primacy:

Primary enforcement responsibility for carrying out the Safe Drinking Water Act of 1974.

Public Water System (PWS):

A set of components for the provision of piped water to persons for human consumption, if such facility has at least fifteen service connections or regularly serves at least twenty-five individuals 60 or more days per year.

Purge:

To remove from a computer those items no longer desired.

Raw Water:

Water at the source before any treatment.

Record:

A logical group of data elements.

Regulations:

Rules created by EPA within the guidelines established by the SDWA and having the same authority.

Report:

Information formatted by the computer in either human-readable form (such as a printed report) or machine-readable form (such as a magnetic tape).

Sample:

A portion of the whole to represent the whole, especially water.

Sanitary Survey:

An on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such source for producing and distributing safe drinking water.

Selection Process:

The method used by MSIS for selecting information from a computer file for use in a report. Many different criteria can be used in the selection of the data.

Software:

The computer programs required for the computer to work.

Subsystem:

A subset of the MSIS computer system. There are nine MSIS subsystems.

System:

A method or methods of accomplishing a function or functions, especially with a computer.

Table:

A computer file of brief information usually set up in logical relationships to permit quick access, often on magnetic disc.

Turnaround Document:

A form containing computer-printed information which needs additional information written on it; called "turnaround" since it is both an output and an input.

Unit:

A subset of teaching material within a course.

Variance:

Authorized deviation from an applicable national drinking water regulation because characteristics of the raw water source cannot be corrected by available means.

List of Abbreviations

Abbreviation	Meaning
BIP	Background Informational Package
CVT	Code Value Table
DET	Data Element Table
DVF	Deviations File
EAF	Enforcement Actions File
EMT	Error Message Table
ENAC	Enforcement Actions Subsystem
EPA	Environmental Protection Agency
FEDR	Federal Reporting Subsystem
LBT	Laboratory Table
MCL	Maximum Contaminant Level
MSIS	Model State Information System; also MSIS Standard Processing Subsystem
NIF	National Inventory File
NIPDWR	National Interim Primary Drinking Water Regulations
OMF	Operator and Mailing File
OPER	Operator and Mailing Subsystem
OWS	Office of Water Supply
PSF	Periodic Sample and Analysis File
PWF	Public Water System File
PWS	Public Water System
PWSI	Public Water System Inventory Subsystem
PWT	Public Water System Table
REGS	Regulations Subsystem

RGF	Regulations File
SAF	Sample and Analysis File
SDWA	Safe Drinking Water Act
SHF	MSIS Standard History File
SRVY	Sanitary Survey Subsystem
VAEX	Variances and Exemptions Subsystem
VEF	Variances and Exemptions File
VIF	Violations File
WAQC	Water Quality Compliance Subsystem

EXTRACTS FROM
MSIS DOCUMENTS

II. System Overview

A. Introduction

The Model State Information System (MSIS) is a computer based information system designed to be used by the individual states and regional offices to meet the requirements of the "National Interim Primary Drinking Water Regulations" (December, 1974). These regulations were formulated by the U.S. Environmental Protection Agency under the authority of the Safe Drinking Water Act of 1974.

Using as a basis the *Program Evaluation Requirements, Concepts and Plans for EPA Safe Drinking Water Program* (Office of Water Supply, EPA, October 1975), American Management Systems, Inc. (AMS), performed a feasibility study and general systems design of the Model State Information System (June 15, 1976). Detail systems design, programming, testing, and documentation was carried out by SouthWestern Ohio Regional Computer Center (SWORCC).

MSIS is made up of five required subsystems and four optional subsystems. The five required subsystems are:

Public Water System Inventory Subsystem (PWSI)
Regulations Subsystem (REGS)
Water Quality Compliance Subsystem (WAQC)
Federal Reporting Subsystem (FEDR)
Standard Processing Subsystem (MSIS)

The four optional subsystems are:

Variances and Exemptions Subsystem (VAEX)
Enforcement Actions Subsystem (ENAC)
Sanitary Survey Subsystem (SRVY)
Operator and Mailing Subsystem (OPER)

B. General System Approach

The Model State Information System (MSIS) is designed to be standard enough that the individual states can use it on their various computer systems. At the same time, MSIS is flexible enough that the states may select segments of the system that fit their needs and may even easily modify the system to add to its functions.

Modularity of MSIS allows for flexibility. In order to give the States and regions the capability to fulfill their basic responsibilities to OWS, a minimum of five subsystems are required to do MSIS processing. They are the Public Water System Inventory Subsystem, the Water Quality Compliance Subsystem, the Regulations Subsystem, the Federal Reporting Subsystem, and the Standard Processing Subsystem. Four additional subsystems may be added, each at the discretion of the State or Region: the Variances and Exemptions Subsystem, the Sanitary Survey Subsystem, the Enforcement Actions Subsystem, and the Operator and Mailing Subsystem. In this way, the state may selectively add to or replace functions they currently have.

Within the subsystems, there is a built-in flexibility allowing the states to mold the system to better meet their individual needs. As an example, the Regulations Subsystem allows the states to input state regulations in addition to the required federal regulation. Flexibility is also given in report generation by allowing the state to select what information is to be contained on fixed format reports and in what order the report is produced. It must be emphasized, however, that any major changes may also require programming changes.

To contribute to the uniformity of MSIS, the following functions were standardized:

- File Maintenance
- Error Processing
- History Processing
- Report Generation
- Data Editing

1. File Maintenance

Adds:

The initial creation of a record on an MSIS file is accomplished with an ADD trasaction (code 00) which must contain all information necessary for processing by MSIS before it can be accepted.

Updates:

Existing data is modified by Update transactions. New data is edited and applied to the files field by field. An erroneous transaction field will not cause the entire transaction to be rejected. Instead, valid fields will be updated and only erroneous fields will need to be corrected and reentered. Since most update transactions refer to several data elements, the following approach is used:

a. If a data element field is blank, the data element on the file is not modified.

b. If the data element field contains a "$" in the leftmost position, the data element is reinitialized (existing data is replaced with blanks or zeros).

c. If transaction code "99" is used, the entire record is flagged as deleted. The only exception is in the Water Quality Compliance Subsystem, program WAQC010, where the delete transaction code is "01".

d. All other values can be used to replace the current value of the data element in the file provided that the new data is valid. Refer to the Data Element Dictionary (DED) to find the edit criteria for data elements.

2. Error Processing

Prior to actual processing, however, errors in processing options records must be handled in the individual programs. Errors created during actual processing of create and update modules in MSIS are handled by Standard Error Processing, a part of the Standard Processing Subsystem (MSIS). These errors created while updating or maintaining files, create the Standard Error File (SEF).

The SEF is processed by Standard Error Processing program (MSIS010) using the Error Message Table (EMT), to interpret the errors, and creating the Data Entry Error Report (Exhibit MSIS.313).

The Optional Error File (OEF) is an optional file which may be produced during Standard Error Processing so that the errors can be corrected by some text editing facility.

3. History Processing

In order to maintain an audit trail of the more important files of MSIS, two history processes are used. The Standard History Processing programs (MSIS.020,040,050), a part of the Standard Processing Subsystem, are used to record and make use of a history of all changes made to the Violations File (VIF), the Variances and Exemptions File (VEF), the Enforcement Actions File (EAF), and the Operator and Mailing File (OMF). These history records are maintained on the Standard History File (SHF).

The Public History File (PHF) is used to maintain a similar audit trail for the more complicated Public Water File (PWF) within the Public Water System Inventory Subsystem, (PWSI.070, 080, 090).

4. Report Generation

To permit the user to select and order records from files according to very flexible criteria, standard selection and sort methods are used throughout MSIS. Standard selection and sort processing options formats are used in all MSIS programs.

The selection process allows a maximum of thirty-five (35) data elements to be used as keys to determine if the data record qualifies to be selected. The user, therefore, can have an ample range for selecting records to be reported.

Additionally, the user has the option to have the records sorted in a meaningful sequence for the generation of a report. The user must keep in mind the length of the data elements to be used for sorting. A maximum of thirty (30) characters, accumulating all the lengths of the data elements, is allowed with no one length being greater than fifteen (15). Any data element with a length greater than fifteen will only use the first fifteen characters of the data element for sorting.

5. Data Editing

Some edit criteria is contained in the Code Value Table (CVT). The CVT contains acceptable data values in separate files for the eight subsystems of MSIS and one file of common data element values shared by two or more subsystems. (These common data elements are listed in Appendix A of the Data Element Dictionary). The CVT is used whenever possible to determine acceptable values.

C. Naming Conventions

1. File Name Abbreviations

Each file and table has associated with it a three letter abbreviation used in the full, programming name as an abbreviation for the file and a two letter mnemonic prefix used in the files' data element mnemonic names.

File Name	File ID	Mnemonic Prefix	Subsystem
Code Value Table	CVT	CV	MSIS
Compliance Status File	CSF	(none)	WAQC
Data Element Table	DET	DE	MSIS
Deviations File	DVF	(none)	FEDR
Enforcement Actions File	EAF	EA	ENAC
Error Message Table	EMT	EM	MSIS
Laboratory Table	LBT	LB	WAQC
Optional Error File	OEF	OE	MSIS
Operator and Mailing File	OMF	OM	OPER
Public History File	PHF	PH	PWSI
Periodic Sample File	PSF	PS	WAQC
Public Water File	PWF	PW	PWSI
Public Water Table	PWT	PT	PWSI
Regulations File	RGF	RG	REGS
Sample Analysis File	SAF	SA	WAQC
Standard Error File	SEF	SE	MSIS
Standard History File	SHF	SH	MSIS
Variances and Exemptions File	VEF	VE	VAEX
Violations File	VIF	VI	WAQC

2. COBOL Programming Names

The file and table data element names used in programming are assigned using the three letter file ID followed by a dash and a one (1) to twenty-six (26) character descriptive name. Example: PWF-PLANT-POPULATION-SERVED. (ANSI COBOL allows a maximum of thirty characters for a data name.)

3. Mnemonic Names

The Data Elements of some of the permanent files and tables have mnemonic names in addition to the COBOL programming names. The mnemonic name is formed using the two letter mnemonic prefix followed by a dash and a one (1) to seven (7) character abbreviation of the descriptive portion of the corresponding programming name. Example: PW-PL-POPL for PWF-PLANT-POPULATION-SERVED. The mnemonic names are used when filling in the SORT and SELECTION processing option forms, and also appear on the Standard Error Report.

4. Exhibits

Exhibit numbers are prefixed by the four letter subsystem prefix followed by:

A. 100-199 for input forms

B. 200-299 for record definitions

C. 300-399 for report layouts

D. 400-499 for turnaround documents

D. Files and Tables

The following are the permanent files and tables of MSIS. They are listed by the subsystem responsible for the files' creation.

1. Public Water System Inventory Subsystem (PWSI)

   a. Public Water File (PWF), Exhibit PWSI.200, Data Element Catalogue Numbers 145 through 264, 701 and 702: The PWF is a variable length, sequential access file of detailed information about all Public Water Systems in the state.

   b. Public Water Table (PWT), Exhibit PWSI.201, Data Element Catalogue Numbers 265 through 278, and 703: The PWT is a fixed length, direct access file of selected information from the PWF used primarily for supplying information on reports throughout MSIS.

   c. Public History File (PHF), Exhibit PWSI.202, Data Element Catalogue Numbers 310 through 318: The PHF is a fixed length, sequential access history file of all modifications to the PWF used as an audit trail of the file.

2. Regulations Subsystem (REGS)

   a. Regulations File (RGF), Exhibit 250 through 257, Data Element Catalogue Numbers 1 through 144: The RGF is a fixed length, sequential access file of all state and federal drinking water quality regulations.

3. Water Quality Compliance Subsystem (WAQC)

   a. Periodic Sample File (PSF), Exhibit WAQC.252, Data Element Catalogue Numbers 399 through 429, 817 and 818, and 900 through 902: The PSF is fixed length, sequential access file of all water quality sample transactions.

   b. Sample Analysis File (SAF), Exhibit WAQC.254, Data Element Catalogue Numbers 356 through 392, 807 through 816. The SAF is a fixed length, sequential access file containing a record for each chemical or radiological sample and a summary record of bacteriological and turbidity samples. The SAF is a summary of the PSF used to reduce the great numbers of sample records kept.

   c. Violations File (VIF), Exhibit WAQC.255, Data Element Catalogue Numbers 326 through 355 and 800 through 806, and 819. The VIF is a fixed length, sequential access file of the violations to the drinking water regulations.

d. Laboratory Table (LBT), Exhibit WAQC.250, Data Element Catalogue Numbers 319 through 325 and 820: The LBT is a fixed length, direct access file of laboratories authorized to analyze water samples.

e. Compliance Status File (CSF), Exhibit WAQC.257, Data Element Catalogue Numbers 516 through 533. The CSF is a fixed length, sequential access file of information which deals with compliance determination.

4. Federal Reporting Subsystem (FEDR)

a. Deviations File (DVF), Exhibit FEDR.202, Data Element Catologue Numbers 492 through 511: The DVF is a fixed length, sequential access file of violations, variances, and exemptions. The DVF is created in FEDR for submission to EPA.

5. Standard Processing Subsystem (MSIS)

a. Code Value Table (CVT), Exhibit MSIS.206, Data Element Catalogue Numbers 279 through 284: The CVT is a fixed length, sequential access file of data element values used in editing in MSIS.

b. Data Element Table (DET), Exhibit MSIS.201, Data Element Catalogue Numbers 285 through 293: The DET is a fixed length, sequential access file of data element information used in MSIS.

c. Error Message Table (EMT), Exhibit MSIS.205, Data Element Catalogue Numbers 294 through 297: The EMT is a fixed length, sequential access file of errror codes and associated messages used in standard error processing.

d. Optional Error File (OEF), Exhibit MSIS.215, Data Element Catalogue Numbers 308 and 309: The OEF is a fixed length, sequential access file of errors created during MSIS processing used for correcting the errors using text editing facilities.

e. Standard Error File (SEF), Exhibit MSIS.207, Data Element Catalogue Numbers 298 through 300: The SEF is a fixed length, sequential access file of errors created during processing in MSIS.

f. Standard History File (SHF), Exhibit MSIS.202 Data Element Catalogue Numbers 301 through 307:

The SHF is a fixed length, sequential access file of changes made to the Violations File (VIF), the Enforcement Actions File (EAF), the Variances and Exemptions File (VEF), and the Operator and Mailing File (OMF).

6. Variances and Exemptions Subsystem (VAEX)

   a. Variances and Exemptions File (VEF), Exhibit VAEX.212, Data Element Catalogue Numbers 455 through 477: The VEF is a variable length, sequential access file of the variances and exemptions granted by the state to public water systems.

7. Enforcement Actions Subsystem (ENAC)

   a. Enforcement Actions File (EAF), Exhibit ENAC.202, Data Element Catalogue Numbers 430 through 454: The EAF is a variable length, sequential access file of enforcement actions being monitored by the state.

8. Operator and Mailing Subsystem (OPER)

   a. Operator and Mailing File (OMF), Exhibit OPER.200, Data Element Catalogue Numbers 478 through 491: The OMF is a variable length, sequential access file of mailing information and records of certified operators.

(Sanitary Survey Subsystem (SRVY) does not create any permanent files.)

III. Subsystem Descriptions

A. Public Water System Inventory Subsystem (PWSI)

1. General Description

The Public Water System Inventory Subsystem (PWSI) is central to and a mandatory subsystem of the Model State Information System (MSIS). This subsystem maintains descriptive data about Public Water Systems (PWS's) on a Public Water File (PWF). This file is also used by other subsystems. The principal function of the PWSI Subsystem is to create and maintain this file and to display its contents upon request.

The PWF is used in the following subsystems:

- Water Quality Compliance Subsystem (WAQC) uses the PWF to identify state defined regulation criteria for each specific PWS.

- Federal Reporting Subsystem (FEDR) uses the PWF to report on the individual PWS's which were modified in a specific reporting period.

- Sanitary Survey Subsystem (SRVY) uses the PWF to selectively weigh and list PWS's for survey purposes according to specific criteria.

In addition, some basic descriptive data is maintained in a direct access file, the Public Water Table (PWT), that is used as a verification aid and as a source of Public Water File data by the following subsystems: Enforcement Actions Subsystem, Variances and Exemptions Subsystem, and Operator and Mailing Subsystem. This table is built from the PWF.

3. PWSI Subsystem Overview

The overall design of the PWSI includes the following functions:

- conversion of the PWF from the National Inventory File
- data entry and updating
- selection of data for reporting from the Public Water File and Public History File
- condensed reporting
- state discretionary data reporting
- Public Water System production data reporting
- comprehensive reporting
- history file maintenance, purge and reporting
- initial creation of the PWF from the national PWS Inventory File
- creation of the PWT

The main features of the PWSI Subsystem are

- Inputs do not depend on automation of other optional subsystems
- A sequential file and a direct-access table
- Variable length record for each PWS dependant on the number of water sources
- Flexible reporting modules that allow the user to specify selection criteria and sort sequence, but within predetermined print formats
- Suitable for annual reporting to EPA

Inputs to the subsystem consist of source documents that are transcribed on special input forms and then keypunched. The regular process is to read the input transactions and edit and verify all verifiable data. Transactions without errors are used to update the PWF, and those in error appear on an error list produced to facilitate correction of errors. Periodically and upon request, the PWF can be used to list an inventory of Public Water Systems and other information for use by state officials.

The inputs to PWSI Subsystem emanate from such sources as:

- EPA National PWS Inventory File (an inital conversion process)

- Sanitary surveys scheduled or performed

- Permits for new PWS's

- Updates received from PWS operators

- Updates received from VAEX, if subsystem is used

- Updates received from WAQC

Except for data from the EPA National PWS Inventory File, all inputs must be transcribed on a single input form that may be used for all these transactions (See Exhibit PWSI.400-401).

Exhibit PWSI.400-401 contains the format for PWS status and entry. This form serves two purposes:

- As an input form for the creation of a new PWS record

- As a turnaround document on which a PWS status is printed and which can be used to make changes and corrections to the record.

B. Regulations Subsystem (REGS)

1. General Description

The Regulations Subsystem (REGS) is a mandatory subsystem whose purpose is to create the Regulations File (RGF). The RGF is a file of records containing the Federal and/or state regulations for contaminants monitored in drinking water. The RGF serves as a basis for determining whether water samples taken from a PWS distribution system are in compliance with chemical, radiological, bacteriological or turbidity State or Federal Regulations. Each record on the RGF pertains specifically to information necessary to define a State or Federal Regulation for one contaminant. In addition, Federal and State Regulation tables such as the fluoride temperature dependent maximum contaminant levels are included in the RGF.

Drinking water quality is determined by comparing the results of laboratory analysis with the requirements of the National Interim Primary Drinking Water Regulations as contained on the RGF. These regulations specify the number of samples required, analysis methods allowed, and contaminant levels permitted. In some instances Federal standards are modifiable by the States (for example, as in 141.27, using alternative analytical techniques). A State may also choose to enforce its own, more stringent standards, in which case, a Public Water System (PWS) may be in violation of the state's standards, but not of the federal standards.

The RGF is used by the Water Quality Compliance Subsystem (WAQC) for determining Maximum Contaminant Level (MCL) and Sampling Violations and for scheduling samples and subsequent analysis for a given PWS.

3. REGS Subsystem Overview

The Regulations Subsystem consists of only two modules (REGS010 and REGS020) whose functions are to accept input transactions to create the Regulations File (RGF) and list its contents.

The fundamental structure of the RGF follows the National Interim Primary Drinking Water Regulations. If a State defines its regulations differently, the file formats may not fit the structure of the State regulation and a special interface must be developed for that State. States may, however, add contaminants to the file so long as the basic structure of the record is not violated.

The input consists of cards keypunched from the Regulations Subsystem input forms (Exhibits REGS.101 to 108). The output comprises the Regulations Tables and Reports (Exhibit REGS.301 - 308). The process consists of reading and editing all input transactions, creating a new RGF and listing its contents.

Since the regulations are expected to be fairly static once established, the system does not provide individual record update capability. Each time a regulation is changed, data from the new set of keypunched cards entirely rebuilds the RGF. However, states that have access to sophisticated computerized text editors may wish to maintain the RGF through such existing procedures.

C. Water Quality Compliance Subsystem (WAQC)

1. General Description

The Water Quality Compliance Subsystem (WAQC) is a mandatory subsystem which is designed to monitor the quality of the drinking water supplied to the public. Two levels of PWS compliance with the Safe Drinking Water Act may be defined. The first, or primary level of compliance is achieved by using those treatment, storage, and distribution methods needed to supply safe drinking water. A secondary compliance level is achieved by monitoring the quality of the drinking water being supplied to the public. This is a more indirect level and, therefore, less desirable method of detecting problems. Primary compliance actions are designed to prevent problems before they arise; secondary compliance activities are designed to identify problems and correct them after they have arisen.

Primary compliance can be controlled by a state in two ways; by a permit program for new PWS or by periodic sanitary surveys. A permit program is essentially a sanitary engineering task. The PWSI Subsystem will be used to maintain most data elements related to facilities. The Sanitary Survey Subsystem is used to schedule inspections of PWS facilities and thus provides a second way of controlling basic compliance.

Secondary compliance is accomplished by monitoring the sampling and analysis of finished water. The WAQC is designed to provide the means for this monitoring process.

There are eight requirements in the National Interim Primary Drinking Water Regulations that a PWS could violate:

(1) Maximum Contaminant Level (MCL).

(2) Sampling requirements: number, frequency, and methodology;

(3) Check sampling;

(4) State notification;

(5) Public notification;

(6) Treatment techniques;

(7) Violation of compliance schedule under a variance or exemption;

(8) Record Keeping.

The main purpose of the WAQC is to identify violations of the first three of these regulatory requirements. In this way, the Water Quality Compliance Subsystem compliments the PWSI Subsystem and the Sanitary Survey (SRVY) Subsystem by providing data management for tracing non-compliance with the Safe Drinking Water Act.

Secondary compliance can be further classified as compliance with the National Interim Primary Drinking Water Regulations or compliance with the state's own standards. There is a need to identify both, and also to indicate if non-compliance is temporarily overruled by variances or exemptions. The WAQC Subsystem responds to this need by using the Regulations File (RGF) and the Public Water File (PWF).

3. WAQC Subsystem Overview

The WAQC contains programs to carry out the following functions:

- Data Entry and Updating
- Selection and Sorting
- Reporting
- Purging
- Summarizing
- Violation Identification
- Sample Scheduling

The main features of the Water Quality Compliance Subsystem are:

- Batch, sequential processing;
- Interaction with the other MSIS Subsystem;
- Flexible selection and reporting modules that allow the user to specify record selection and sort sequence, but within predetermined print formats;
- Identification of violations of sampling requirements and contaminanct levels.

Analysis result input transactions are entered via sample data input forms for bacteriological, turbidity, chemical, and radiological samples. Input transactions may also be used for creating, deleting, or updating files (Periodic Sample File, Sample Analysis File, Violations File, Laboratory Table)

The three basic transactions in the sample data, file updates, and file deletions -- are discussed below:

a. Sample Data

The system is designed to accept three types of samples described below -- bacteriological, turbidity, and chemical and radiological samples.

1. Bacteriological Samples

Bacteriological samples may be reported by each PWS on a monthly summary form (Exhibit WAQC.108 and 402) or as a list of samples (Exhibit WAQC.107 and 401). The state may use the Bacteriological Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

2. Turbidity Samples

A PWS may report turbidity samples on a summary form (Exhibit WAQC.108 and 407) or a list of individual samples (Exhibit WAQC.107 and 405). The state may use the Turbidity Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

3. Chemical and Radiological Samples

Results of samples for chemical and radiological analysis must be reported individually (Exhibits (WAQC.106, 400). This form contains only the contaminants included in the National Interim Primary Drinking Water Regulations; states may add more contaminants to its individual forms if desired.

b. File Updates

Violations which are not automatically identified by the Water Quality Compliance Subsystem must be reported using the Violation Reporting Form for additions or updates to the Violations file.

c. Deletion

The Sample Analysis File (SAF) and Violations File (VIF) use code 99 for deletions. The Periodic Sample File (PSF) is an exception; it uses code 01 for deletion. This exception was permitted because the PSF does not allow updating. The only way an update can be accomplished is to first delete (code 01) and, second, add a corrected version.

All analysis result input transactions are edited and posted to the Periodic Sample File (PSF) which is used to collect and store data during the compliance cycle. Every reporting period, some of the data from the PSF will be summarized and posted to the Sample Analysis File (SAF).

The PWF, VEF and the Violations File (VIF) are matched to create a Deviations File and modified Public Water File (PWF). These two files constitute most of the annual reporting requirements.

D. Federal Reporting Subsystem (FEDR)

1. General Description

The Federal Reporting Subsystem (FEDR) is a mandatory subsystem which produces two of the four files needed to meet requirements as specified in Section 142.15 of the Interim Primary Drinking Water Regulations that must be sent to EPA by states who assume primary enforcement responsibility. These include:

- Additions to the National Public Water System Inventory or any Public Water File record which was modified in the past year.
- All Federal violations of the primary drinking water regulations;
- All variances or exemptions being considered or granted by the state and the status of each of the variances and exemptions.

The purpose of the FEDR Subsystem is to retrieve data elements from the state's files, and if necessary, reformat them, and create two files for reporting to EPA. There are two modules FEDR010 and 020.

3. FEDR Subsystem Overview

The features of the subsystem are:

- Batch processing of the Public Water File, Variance and Exemption File, and the Violations File which are necessary for periodic reporting to EPA.
- Output is in the format required by EPA for reporting

One of the potential benefits from implementing the subsystem is that states need not perform any special action for the annual report to EPA. Execution of the Federal Reporting Subsystem will automatically produce a Public Water File of all new or modified Public Water Systems and a file of all Federal Violations and Variance and Exemptions, unless the Variances and Exemptions Subsystem is not implemented, in which case their reporting must be done manually. This will save states using the Model State Information System the expense of preparing special summaries or input forms for EPA. And EPA will enjoy the benefit of standard formatted input files and more timely, accurate, and formatted input to its own data management system.

The process in preparing files and reports to submit to EPA is composed of the following steps:

a. Update the Violations File (VIF) with all current Violations data (module WAQC120) and produce the Compliance Summary Report (module WAQC125), selecting only those records which violate the Federal Interim Primary Drinking Water Regulations.

b* Update the Variances and Exemptions File (VEF) with all current Variances and Exemptions data (module VAEX010) and produce the Variances and Exemptions Condensed Report (modules VAEX040, VAEX041).

c. Run the Federal Reporting jobstream which will:

   1. Build the modified Public Water File (PWF) (module FEDR010).

   2. Build the Deviations File (DVF) (module FEDR020).

d. Run the following jobs which will complete the Federal Reporting Process:

   1. Produce the Public Water System Condensed Report from the modified PWF (modules PWSI020,PWSI030).

   2* Copy the Enforcement Actions File (EAF).

   3* Produce the Enforcement Actions Case History Report (modules ENAC020, ENAC030).

The files that are required for reporting are then ready, together with reports of their contents. Copies of the reports which were produced in the above steps should be made available for public inspection as required by 142,15(d) of the regulations.

*Note: These steps are bypassed if the subsystem referred to is not installed.

E. Standard Processing Subsystem (MSIS)

1. General Description

The Standard Processing Subsystem (MSIS) is a mandatory utility subsystem. It provides all of the other subsystems except Federal Reporting (FEDR) and Sanitary Survey (SRYV) Subsystems, with edit criteria and error processing. It provides a history file for Enforcement Actions (ENAC), Operator and Mailing (OPER), Variances and Exemptions (VAEX), and Violations File (VIF) from Water Quality Compliance (WAQC).

3. MSIS Subsystem Overview

The major functions of the MSIS subsystem are:

- Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) Creation
- Error handling
- History maintenance, purge, and reporting
- History record selection and reporting

The main features of the subsystem are:

- Sequential files and tables
- Batch processing
- Flexible record selection and reporting modules

The Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) are created in module MSIS030 from input forms Exhibits MSIS.102, 103, 104.

The Standard Error File (SEF) is created by all subsystems except the Sanitary Survey Subsystem (SRVY) and Federal Reporting Subsystem (FEDR) and processed by the MSIS Subsystem.

The Standard History File (SHF) is created by the Water Quality Compliance Subsystem (WAQC), and the Variances and Exemptions Subsystem (VAEX), Enforcement Actions Subsystem (ENAC), and Operator and Mailing Subsystem (OPER) if used by the state or region, and is then processed by the MSIS Subsystem.

F. Variances and Exemptions Subsystem (VAEX)

1. General Description

The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance and processing of data related to the process of granting variances or exemptions from State or Federal Regulations. The variances and exemptions are granted by states who have primary enforcement responsibility. For States that have not qualified for primary enforcement responsibility, the EPA region is authorized to grant variances and exemptions.

Variances and exemptions may not be granted if to do so would result in an "unreasonable risk to health". EPA has indicated that this is to be interpreted to mean that no variances or exemptions from bacteriological Maximum Contaminant Levels (MCL's) should be permitted. Variances and exemptions, therefore, will probably be permitted only from the chemical contaminant levels.

Variances and exemptions both have essentially the same result. Both effectively exempt a Public Water System from one or more requirements of the regulations. The difference lies in the circumstances under which they may be granted and the length of time allowed for compliance.

a. Variances

1. A variance from a maximum contaminant limit may be granted if a PWS is unable to comply because it is unable to make its raw water source safe for technological reasons. For example, many water systems in the southern part of Virginia draw their water from sources containing a naturally high concentration of fluoride. These systems will probably have to find an alternative source of water either by building a new treatment plant at another location or purchasing their water from a safe supplier. Until they are able to locate an alternative source and build the necessary treatment facilities or locate a safe supplier, they will need a variance from the fluoride contaminant limit.

2. A variance from the required treatment technique may be granted if a PWS can demonstrate that the treatment is not required because of the high quality of its raw water. In this case, the raw water is naturally free from a particular type of contaminant or contains low enough levels that it is unnecessary to treat it for that particular type of contaminant.

The first type of variance will be terminated when the system comes into compliance with the standard. The second type may be terminated at any time upon a finding that the nature of the raw water sources has changed to the extent that treatment is required. In effect, both types of variances will be granted for indefinite time periods with no legislated termination date.

b. Exemptions

Exemptions may be granted to PWS's that are unable to comply for compelling reasons, mainly economic ones. In other words, an exemption is designed to solve the problem of systems that cannot afford to apply available treatment technology rather than the problem of systems that cannot make their water safe with even the best available treatment technology. Exemptions address an economic problem, variances, a technical problem. Unlike variances, moreover, exemptions cannot be granted for indefinite time periods. The act itself states that compliance must occur by certain dates.

Exemptions are clearly aimed at the economic problems of smaller systems. The states cr regions can use exemptions to give smaller systems additional time to comply with the regulations, but the Act contains specific cutoff dates by which these systems must be in compliance regardless of the cost.

If a variance or exemption is granted, the state or EPA region must prescribe a schedule for compliance and interim control measures within one year of the date it is granted. The state or region must monitor actual progress against this schedule in the same way that it has to monitor compliance with the main body of drinking water regulations.

3. VAEX Subsystem Overview

The VAEX subsystem must maintain variances and exemption information for three purposes. First, this type of information is required by the Federal Reporting Subsystem (FEDR) for reporting to EPA. Second, information is required for monitoring progress against compliance schedules specified in particular variances and exemptions for particular Public Water Systems. Last, any variance or exemption data needed for determining compliance will be generated by this subsystem and transmitted to the Public Water File.

The major functions of VAEX are:

- Data Entry and Updating
- Selection and Reporting
- Providing data to the Public Water System Inventory Subsystem.

The main features of the VAEX subsystem are:

- Sequential, variable length file;
- Batch processing;
- Flexibility in reporting with respect to selection, sorting, summarizing;
- Subsystem is optional and can be used if needed.

The source of transactions to create and maintain the Variances and Exemptions File (VEF) is the administrative unit responsible for the granting and monitoring of variances and exemptions.

All variances and exemptions on the VEF are identified by a sequential identification number. Accordingly, transactions refer to a VEF record by that number in positions 1 to 5 of the record. There are four types of transactions: addition of a new VEF record, milestone creations, changes to data elements in an existing record, and deletion of an existing record. All transactions are identified by a two-digit transaction code in positions 6 to 7 of the record. The transaction key, positions 1-7, is a combination of VAEX-ID and transaction code. Reference input forms layout in Exhibit VAEX.100, 101, 107.

G. Enforcement Actions Subsystem (ENAC)

1. General Description

The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance, and processing of data related to actions performed in connection with enforcing the state's own regulations (or the Federal Regulations) under the Safe Drinking Water Act. The data can then be used for evaluating the effectiveness of different types of enforcement actions. Reporting to EPA of enforcement actions, as required by section 142.15 of the regulations, can also be done automatically using the subsystem by submitting to EPA the reports of the entire Enforcement Actions File (EAF).

H. Sanitary Survey Subsystem (SRVY)

1. General Description

The Sanitary Survey Subsystem (SRVY) is an optional subsystem designed to satisfy Section 142.10 (B)(2) of the Drinking Water Standards Implementation Regulations which requires states that assume enforcement responsibility to have "A systematic program for conducting sanitary survey compliance..."

A survey of 24 states shows that many states do not have enough manpower to survey as they would like. The addition of non-community Public Water Systems (PWS's) to those already under regulation, will increase the need for a systematic method of scheduling sanitary surveys. The Sanitary Survey Subsystem is designed to provide this systematic method.

The method is based on assigning different weight to five parameters: PWS type size of population served, the type of source water and Public Water System has, compliance history, and period elapsed since last survey. State officials can change the relative weights until a satisfactory formula is reached.

3. ENAC Subsystem Overview

The major functions of ENAC are:

- Data entry and updating
- Selection and reporting

The subsystem has the following features:

- Flexibility in preparing reports with respect to selection criteria and sorting;
- Subsystem is optional within MSIS;
- Batch processing using sequential files.

The source of transactions to create and maintain records in the Enforcement Actions File (EAF) is the administrative unit responsible for enforcing the drinking water requlations by formal actions.

A five-digit sequential number is used to identify an Enforcement Action record. This number in positions 1 to 5 of a transaction and transaction code in positions 6 and 7 constitute the transaction key.

3. System Overview

The major functions of SRVY are:

- Scheduling
- Reporting

The features of the subsystem are:

- Simple, batch processing;
- Generation of Public Water File form designed as a turnaround document for computer input processing;
- Interaction with the PWSI Subsystem.

SRVY uses the Public Water File (PWF) and Violations File (VIF) to identify systems who are in violation and those who fit the prescribed conditions for selection.

I. Operator and Mailing Subsystem (OPER)

1. General Description

The Operator and Mailing Subsystem (OPER) is an optional subsystem designed for two purposes: first, to provide management with data concerning certified operators, and second, to provide the state with the capability to manage a mailing distribution list for mailing material to local governments, cities, consulting engineers, etc. Since the mailing list and operator data requirements are similar, these two functions are combined in a single subsystem.

3. OPER Subsystem Overview

The major functions of OPER are:

- Data Entry and Update
- Selection and Reporting
- Label Printing

The subsystem features:

- Off-line batch processing
- Sequential processing of a variable length
- Flexibility in reporting or printing labels with respect to selection and sorting.

Transactions to maintain the Operator and Mailing File (OMF) are of three types: add a new record, change data elements in an existing record, and deletion of a record. Records are identified by a five-digit sequential number and an addressee type code.

Addressee type '0' is reserved for operators. Other addressee types are left to be defined by each state according to its needs.

Because an operator record contains more information than other addressee type records, there are two different input forms for the two types (see Exhibits OPER.107 and 108). The difference between the two is that transaction '03' applies only to operator records.

Input Forms

Subsystem	Processing Options															
	PROC. Prog.	No.	SORT Prog.	No.	SEL1 Prog.	No.	SEL2 Prog.	No.	Table Creation Prog.	No.	Record Creation Prog.	No.	Water Quality Prog.	No.	Scheduling Prog.	No.
PSWI	010 020 - 050 060 070 080 090 120 - 130	111 113 110 106 101 103 101	030 - 080	100	020 & 080	107	020 & 080 RESTART 125	108			010	114				
WAQC	010 & 020 011 & 125 025 040 100 120 130 210 220	103 111 121 112 115 118 114 100 113	011 040 - 113	104 113	100 & 125	116	100 & 125	117	210	101 102	120	119 120 020	010	106 107 108 105 110	130	124
REGS	010 020	199 109							010	101 102 103 104 105 106 107 108						
VAEX	010	102	040	103	040	105	040	106			010	100 101 107				
SRVY	010	100	010	101												
ENAC	010 020	100 105	020	106	020	107	020	108			010	101 102 103 104				
OPER	010 020	101 102	020	103	020	104	020	105			010	100				
MSIS	030 & 040 050	101 100	040	108	040	106	040	107	030	102 103 104						
FEDR	010	100														
TOTALS	32	26	22	7	8	6	8	6	3	13	5	11	2	5	1	1

```
              VARIES                              1 of 1
                                                  10/28/76
     This report is produced by any module that needs an Update Statistics Report.
                SouthWestern Ohio Regional Computer Center
     EXHIBIT MSIS.300


                                           MODEL STATE INFORMATION SYSTEM
      XXXXXXX ①                      X-------------------------------------------X ②

      DATE XX/XX/XX                       STANDARD UPDATE STATISTICS REPORT                          PAGE ZZZZ9

                                                                                 % RELATIVE TO THE
                                                                        TOTAL      ORIGINAL FILE

                         1. NUMBER OF RECORDS ORIGINALLY ON THE FILE       ZZZ,ZZZ,ZZ9

                         2. NUMBER OF ACCEPTABLE DATA ENTRY TRANSACTIONS   ZZZ,ZZZ,ZZ9

                         3. NUMBER OF STANDARD ERROR RECORDS CREATED       ZZZ,ZZZ,ZZ9

                         4, NUMBER OF RECORDS MODIFIED ON THE FILE         ZZZ,ZZZ,ZZ9    ZZZ9 %

                         5. NUMBER OF NEW RECORDS ADDED TO THE FILE        ZZZ,ZZZ,ZZ9    ZZZ9 %

                         6. NUMBER OF RECORDS DELETED FROM THE FILE        ZZZ,ZZZ,ZZ9    ZZZ9 %

                         7.  NUMBER OF RECORDS NOW ON THE FILE             ZZZ,ZZZ,ZZ9    ZZZ9 %



               ① PROGRAM NAME

               ② SUBSYSTEM NAME
```

STATISTICAL REPORT

```
          REGS020                    1 of 1
                                     9/23/76
  RGF Report Module
            SouthWestern Ohio Regional Computer Center
EXHIBIT REGS.302


                                            MODEL STATE INFORMATION SYSTEM
   REGS020                                     REGULATIONS SUBSYSTEM

   DATE XX/XX/XX                       REGULATIONS REPORT - TURBIDITY CONTAMINANT                              PAGE ZZZZ9

        CONTAMINANT ID                    REGULATION/LEVEL                            CONTAMINANT NAME

            0100                                XX                                       TURBIDITY

               MCL FOR                          MCL FOR                                     NUMBER OF
           MONTHLY AVERAGE                CONSECUTIVE SAMPLES                          CONSECUTIVE SAMPLES

                 Z9                               Z9                                          Z9

              EFFECTIVE                        APPLY TO                                  INCLUDE REPEAT
                DATE                          ALL SOURCES                              SAMPLES IN AVERAGE

              XX/XX/XX                            X                                           X

       ________FREQUENCY  OF  MONITORING_______________                            MINIMUM RESAMPLING PERIOD
                                                                                      IF MCL EXCEEDED
       COMMUNITY PWS:  ZZ9   NON-COMMUNITY PWS:  ZZ9
                                                                                             Z9
```

INPUT REPORT

```
             MSIS010                            1 OF 1
                                                11/18/76
STANDARD ERROR PROCESSING MODULE
          SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT MSIS.313

                                                   MODEL STATE INFORMATION SYSTEM
                                                    STANDARD PROCESSING SUBSYSTEM
MSIS010
                                                      DATA ENTRY ERROR REPORT                                           PAGE ZZZZ9
DATE XX/XX/XX                              FOR SUBSYSTEM:  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   ①

                                                                                           DATA
ERROR                                                                                    ELEMENT COLUMNS        EXPLANATIONS
NUMBER 2345678901234567890123456789012345678901234567890123456789012345678901234567890
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX XX-XX XXXXXXXXXXXXXXXXXXXXXXXXXXX  ②
```

① X'S WILL BE REPLACED BY ONE OF THE FOLLOWING:

- A. PUBLIC WATER SYSTEM INVENTORY
- B. WATER QUALITY COMPLIANCE
- C. REGULATIONS
- D. VARIANCES AND EXEMPTIONS
- E. ENFORCEMENT ACTIONS
- F. OPERATOR AND MAILING
- G. STANDARD PROCESSING

② SEE ATTACHED SHEETS FOR ERROR DESCRIPTIONS

<u>ERROR REPORT</u>

```
                PWS1050                          1 OF 1
                                                 11/18/76
  STATE DISCRETIONARY DATA REPORT MODULE
              SOUTHWESTERN OHIO REGIONAL COMPUTER CENTER
EXHIBIT PWSI.301

                                                      MODEL STATE INFORMATION SYSTEM
  PWS1050                                         PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

  DATE XX/XX/XX                              PUBLIC WATER SYSTEMS - STATE DISCRETIONARY DATA                          PAGE ZZZZ9

  REGN DIST    ID           NAME        ------------------------B A C T E R I O L O G I C A L------------------    ---TURBIDITY---
                                                                                    MIN NO  NCOM  MCL HALT  %
   XX   XX   XXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  BACTI MONTHLY  NO OF   SEASON   DAILY  SAMPLE  CHECK  CHLORINE      TURBIDITY
                                                      FLG  MONITOR SAMPLES START END CHECKS  FREQ   SAMPLE  SAMPLES    FLAG    UNITS

                                                       X      X      XXX   XX/XX XX/XX X     XXX     X       XX         X      X.X

  -----------------CHEMICALS----------------     ---------------------------------RADIOACTIVE----------------------------------
     FOLLOW
   UP MONITOR                      INORGANIC
  CONTAMIN SAMPLE    ORGANIC      AIR  NITRATE    RADIOACTIVE  BETA FREQ  NUCLEAR    MONITOR      MONITOR    NUM SAMPLES  GROUND WATER
     ID     FREQ   BEGIN  END    TEMP   FREQ      FLG MONITOR    MONTHS     FAC    GROSS ALPHA  RADIUM MTHS    PER  YR       MONITOR

    XXXX     XXX   XX/XX XX/XX  XX.X   XXXX        X     X         XX      X  X        XX           XX           X             X
    XXXX     XXX
    XXXX     XXX
    XXXX     XXX

  LAB DATA:          ID         CAPTIVE        TYPE                                       FACILITY        CONTAMINANT
                                                                                        CONTAMIN ID       FREQUENCY
                    XXXXX          X            X
                    XXXXX          X            X                                          XXXX              XX
                    XXXXX          X            X                                          XXXX              XX
                    XXXXX          X            X                                          XXXX              XX
                    XXXXX          X            X                                          XXXX              XX
                                                                                           XXXX              XX
  VARIANCE OR    CONTAMINANT   MODIFIED   ALT MONITOR                                      XXXX              XX
  EXEMPTION:         ID           MCL         FREQ                                         XXXX              XX
                     ,                                                                     XXXX              XX
                    XXXXX       XXXXXX        XXX                                          XXXX              XX
                    XXXXX       XXXXXX        XXX                                          XXXX              XX
                    XXXXX       XXXXXX        XXX
                    XXXXX       XXXXXX        XXX
```

INFORMATIONAL REPORT

```
                                   MODEL STATE INFORMATION SYSTEM
MSIS030                            STANDARD PROCESSING SUBSYSTEM
                                                                                          PAGE      1
DATE 05/11/77                          ERROR MESSAGE TABLE

                FILE ID                 ERROR CODE                   ERROR MESSAGE

                  MS                       001                  REJECT-INVALID RECORD-ID
                  MS                       002                  REJECT-RECORD ALREADY EXISTS
                  MS                       003                  REJECT-NO MATCHING RECORD-ID
                  MS                       004                  REJECT-RECORD IS INCOMPLETE
                  MS                       005                  REJECT-CONTAM ID INVALID
                  MS                       006                  REJECT-STATE VALUE TOO LOW
                  MS                       007                  REJECT-STATE VALUE TOO HIGH
                  MS                       008                  REJECT-FED, RECORD MISSING
                  MS                       009                  REJECT-REC, HAS INVALID DATA
                  MS                       010                  REJECT-NOT NUMERIC
                  MS                       011                  REJECT-VALUE UNNACCEPTABLE
                  MS                       012                  REJECT-VALUE TOO HIGH
                  MS                       013                  REJECT-VALUP TOO LOW
                  MS                       014                  REJECT-NOT IN CODE TABLE
                  MS                       015                  REJECT-PWS ID INVALID
                  MS                       016                  REJECT-LAB NOT AUTHORIZED
                  MS                       017                  REJECT-INVALID TRANSACT CODE
                  MS                       018                  REJECT-REQUIRED DATA MISSING
                  MS                       019                  REJECT-NO MATCHING MILESTONE
                  MS                       020                  REJECT-INVALID DELETE CODE
                  MS                       021                  REJECT-INVALID CREATE CODE
                  MS                       022                  REJFCT-TOO MANY VIOLATIONS
                  MS                       023                  REJFCT-NO MATCHING VIOLATION
                  MS                       024                  REJFCT-INVALID REQUEST CODE
                  MS                       025                  REJFCT-TOO MANY MILESTONES
                  MS                       026                  REJECT-INVALID OCCURRENCE
                  MS                       027                  REJECT-METHOD NOT ON TABLE
                  MS                       028                  REJECT-DUPLICATE MILESTONE
                  MS                       029                  REJECT-ILLEGAL DELETION
                  MS                       030                  REJECT-ASSOC VALUE MISSING
                  MS                       031                  REJECT-TOO MANY CONTAMINANTS
                  MS                       032                  REJECT-NO MATCHING CONTAMNT
                  MS                       033                  REJECT-INVALID DATE
                  MS                       034                  REJECT-DUPLICATE LAB ID
                  MS                       101                  WARNING-CHECK ELEMENT VALUE
                  MS                       102                  WARNING-ELEMENT EXCEEDS MAX
                  MS                       103                  WARNING-ELEMENT BELOW MIN
                  MS                       104                  WARNING-NOT IN CODE TABLE
                  MS                       105                  WARNING-NOT IN DATA ELE TBL
                  MS                       106                  WARNING-DEFAULT VALUE USED
                  MS                       107                  WARNING-NOT NUMERIC
                  MS                       108                  WARNING-VALUE TOO LOW
                  MS                       401                  INVALID-NOT NUMERIC
                  MS                       402                  INVALID-NOT IN CODE TABLE
                  MS                       403                  INVALID-NOT A VALID DATE
                  MS                       404                  INVALID-ELEMENT EXCEEDS MAX
                  MS                       405                  INVALID-ELEMENT BELOW MIN
                  MS                       406                  INVALID-ELEMENT MISSING
                  MS                       407                  INVALID-VALUE UNNACCEPTABLE
                  MS                       408                  INVALID-NOT ALPHABETIC
```

```
                                        MODEL STATE INFORMATION SYSTEM
MSI8030                                 STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                               ERROR MESSAGE TABLE                                          PAGE     2

               FILE ID             ERROR CODE                        ERROR MESSAGE

                 MS                   409                 INVALID=NOT ON PUB WATER TBL
                 MS                   410                 INVALID=ASSOC VALUE MISSING
                 MS                   411                 INVALID=CANNOT ACCESS LBT
                 MS
```

MSI8030

DATE 05/11/77

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

CODE VALUE TABLE

PAGE 1

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
EA	435	1	A	MUNICIPAL AUTHORITY
EA	435	1	C	CONSERVATION ORGANIZATION
EA	435	1	F	FEDERAL GOVERNMENT
EA	435	1	G	GROUP ACTION
EA	435	1	I	INDUSTRIAL ORGANIZATION
EA	435	1	M	MUNICIPAL GOVERNMENT
EA	435	1	N	COUNTY GOVERNMENT
EA	435	1	O	OTHER ORGANIZATION
EA	435	1	P	PRIVATE CITIZEN
EA	435	1	S	STATE GOVERNMENT
EA	435	1	W	WATER SUPPLY OWNER
EA	435	1	0	OTHER ORGANIZATION
EA	435	1	1	INDUSTRIAL ORGANIZATION
EA	437	1	F	FEDERAL POLLUTION SOURCE
EA	437	1	I	INDUSTRIAL POLLUTION SOURCE
EA	437	1	M	MUNICIPAL POLLUTION SOURCE
EA	437	1	N	COUNTY POLLUTION SOURCE
EA	437	1	O	OTHER POLLUTION SOURCE
EA	437	1	P	PRIVATE CITIZEN
EA	437	1	S	STATE POLLUTION SOURCE
EA	437	1	W	WATER SUPPLY OWNER
EA	437	1	0	OTHER POLLUTION SOURCE
EA	437	1	1	INDUSTRIAL POLLUTION SOURCE
EA	449	1	A	PRELIMINARY MOTIONS FILED
EA	449	1	B	SUMMARY MOTION FILED
EA	449	1	C	ORDER,INJUNCTION,TRO FINAL
EA	449	1	D	JUDGEMENT
EA	449	1	E	PENALTY
EA	449	1	F	CONSENT AGREEMENT SIGNED
EA	449	1	G	POST TRIAL MOTIONS FILED
EA	449	1	H	NOTICE OF APPEAL
EA	449	1	I	CIVIL ACTION
EA	449	1	J	STAY PENDING APPEAL
EA	449	1	K	APPEAL PENDING
EA	449	1	L	APPEAL RESOLVED
EA	449	1	M	COMPLIANCE ACHIEVED
EA	449	1	N	COMPLAINT FILED
EA	449	1	O	OTHER
EA	449	1	Z	PENDING DELETION
EA	449	1	0	OTHER
EA	449	1	1	CIVIL ACTION
EA	449	1	2	COMPLAINT FILED
EA	449	1	3	BRIEFS FILED
EA	449	1	4	PRETRIAL HELD
EA	449	1	5	HEARING SCHEDULED
EA	449	1	6	HEARING HELD
EA	449	1	7	ORAL ARGUMENTS HEARD

```
                                        MODEL STATE INFORMATION SYSTEM
MSI8030                                 STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                  CODE VALUE TABLE                                        PAGE     2

                    DATA ELEMENT
        FILE ID     CATALOGUE NO      DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

          EA            449                   1                       8                  INJUCTION REQUESTED
          EA            449                   1                       9                  TRO REQUESTED
```

```
                                        MODEL STATE INFORMATION SYSTEM
                                        STANDARD PROCESSING SUBSYSTEM
MSI8030                                                                                     PAGE    1
                                              CODE VALUE TABLE
DATE 05/11/77

                DATA ELEMENT
      FILE ID   CATALOGUE NO    DATA ELEMENT LENGTH    DATA ELEMENT VALUE      DATA ELEMENT DESCRIPTION
        LB          321                1                      C                COMMERCIAL
        LB          321                1                      D                DAIRY
        LB          321                1                      F                FEDERAL INSTALLATION
        LB          321                1                      G                FEDERAL OTHER
        LB          321                1                      H                HEALTH FACILITY
        LB          321                1                      I                INDIAN  RESERVATION
        LB          321                1                      L                LOCAL
        LB          321                1                      O                OTHER
        LB          321                1                      P                PRIVATE
        LB          321                1                      S                STATE
        LB          321                1                      U                UNIVERSITY
        LB          321                1                      W                PUBLIC WATER SUPPLY
        LB          321                1                      O                OTHER
        LB          321                1                      I                INDIAN  RESERVATION
        LB          820                3                     001               NEPHELOMETRIC
        LB          820                3                     101               ATOMIC ABSORPTIUN
        LB          820                3                     103               FLAMELESS ATOMIC ABSORPTION
        LB          820                3                     105               BRUCINE COLORIMETRIC
        LB          820                3                     107               ELECTRODE
        LB          820                3                     109               CADMIUM REDUCTION
        LB          820                3                     111               COLORIMETRIC,PRELIM DISTILL.
        LB          820                3                     201               ORGANOCHLORINE PESTICIDES
        LB          820                3                     203               CHLORINATED PHENOXY&HERBICIDES
        LB          820                3                     301               DPN - CHLORINE RESIDUAL
        LB          820                3                     303               MEMBRANE FILTER
        LB          820                3                     305               FERMENTATION TUBE - 10 ML
        LB          820                3                     307               FERMENTATION TUBE - 100 ML
        LB          820                3                     401               GROSS ALPHA & BETA, METHOD 302
        LB          820                3                     403               STRONTIUM-89,90, METHOD 303
        LB          820                3                     405               TOTAL RADIUM, METHOD 304
        LB          820                3                     407               RADIUM-226, METHOD 305
        LB          820                3                     409               TRITIUM, METHOD 306
        LB          820                3                     411               CESIUM-134, ASTM D-2459
        LB          820                3                     413               URANIUM, ASTM D-2907
        LB          820                3                     999               OTHER
```

MSIS030

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77

CODE VALUE TABLE

PAGE 1

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
MS	001	4	0100	TURBIDITY
MS	001	4	1005	ARSENIC
MS	001	4	1010	BARIUM
MS	001	4	1015	CADMIUM
MS	001	4	1020	CHROMIUM
MS	001	4	1025	FLUORIDE
MS	001	4	1030	LEAD
MS	001	4	1035	MERCURY
MS	001	4	1040	NITRATE (AS N)
MS	001	4	1045	SELENIUM
MS	001	4	1050	SILVER
MS	001	4	1055	ADDL CHEM 1
MS	001	4	1060	ADDL CHEM 2
MS	001	4	2005	ENDRIN
MS	001	4	2010	LINDANE
MS	001	4	2015	METHOXYCHLOR
MS	001	4	2020	TOXAPHENE
MS	001	4	2035	ADDL CHEM 3
MS	001	4	2040	ADDL CHEM 4
MS	001	4	2105	2,4 - D
MS	001	4	2110	2,4,5 - TP SILVEX
MS	001	4	3000	COLIFORM
MS	001	4	4000	GROSS ALPHA PARTICLE ACTIVITY
MS	001	4	4010	COMBINED RADIUM
MS	001	4	4020	RADIUM-226
MS	001	4	4030	RADIUM-228
MS	001	4	4100	GROSS BETA PARTICLE ACTIVITY
MS	001	4	4102	TRITIUM
MS	001	4	4128	23-VANADIUM-48
MS	001	4	4136	26-IRON-59
MS	001	4	4142	27-COBALT-60
MS	001	4	4146	28-NICKEL-63
MS	001	4	4172	38-STRONTIUM-89
MS	001	4	4174	38-STRONTIUM-90
MS	001	4	4176	39-YTTRIUM-90
MS	001	4	4178	39-YTTRIUM-91
MS	001	4	4184	40-ZIRCONIUM-95
MS	001	4	4188	41-NIOBIUM-95
MS	001	4	4200	43-TECHNETIUM-99
MS	001	4	4206	44-RUTHENIUM-103
MS	001	4	4208	44-RUTHENIUM-106
MS	001	4	4220	47-SILVER-110
MS	001	4	4262	53-IODINE-129
MS	001	4	4264	53-IODINE-131
MS	001	4	4270	55-CESIUM-134
MS	001	4	4306	63-EUROPIUM-154
MS	082	1	0	OTHER

```
                                        MODEL STATE INFORMATION SYSTEM
MSI8030                                 STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                 CODE VALUE TABLE                                                    PAGE     2

                    DATA ELEMENT
       FILE ID      CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

         MS             082                   1                        R                  REACTOR FACILITY
         MS             082                   1                        W                  WASTE STORAGE/REPROCESSING
         MS             082                   1                        O                  OTHER
         MS             149                   2                        AK                 ALASKA
         MS             149                   2                        AL                 ALABAMA
         MS             149                   2                        AR                 ARKANSAS
         MS             149                   2                        AS                 AMERICAN SAMOA
         MS             149                   2                        AZ                 ARIZONA
         MS             149                   2                        CA                 CALIFORNIA
         MS             149                   2                        CO                 COLORADO
         MS             149                   2                        CT                 CONNECTICUT
         MS             149                   2                        DC                 DISTRICT OF COLUMBIA
         MS             149                   2                        DE                 DELAWARE
         MS             149                   2                        FL                 FLORIDA
         MS             149                   2                        GA                 GEORGIA
         MS             149                   2                        GU                 GUAM
         MS             149                   2                        HI                 HAWAII
         MS             149                   2                        IA                 IOWA
         MS             149                   2                        ID                 IDAHO
         MS             149                   2                        IL                 ILLINOIS
         MS             149                   2                        IN                 INDIANA
         MS             149                   2                        KS                 KANSAS
         MS             149                   2                        KY                 KENTUCKY
         MS             149                   2                        LA                 LOUISIANA
         MS             149                   2                        MA                 MASSACHUSETTS
         MS             149                   2                        MD                 MARYLAND
         MS             149                   2                        ME                 MAINE
         MS             149                   2                        MI                 MICHIGAN
         MS             149                   2                        MN                 MINNESOTA
         MS             149                   2                        MO                 MISSOURI
         MS             149                   2                        MS                 MISSISSIPPI
         MS             149                   2                        MT                 MONTANA
         MS             149                   2                        NC                 NORTH CAROLINA
         MS             149                   2                        ND                 NORTH DAKOTA
         MS             149                   2                        NE                 NEBRASKA
         MS             149                   2                        NH                 NEW HAMPSHIRE
         MS             149                   2                        NJ                 NEW JERSEY
         MS             149                   2                        NM                 NEW MEXICO
         MS             149                   2                        NV                 NEVADA
         MS             149                   2                        NY                 NEW YORK
         MS             149                   2                        OH                 OHIO
         MS             149                   2                        OK                 OKLAHOMA
         MS             149                   2                        OR                 OREGON
         MS             149                   2                        PA                 PENNSYLVANIA
         MS             149                   2                        PR                 PUERTO RICO
         MS             149                   2                        RI                 RHODE ISLAND
         MS             149                   2                        SC                 SOUTH CAROLINA
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                                   MODEL STATE INFORMATION SYSTEM
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DATE 05/11/77                            CODE VALUE TABLE                                          PAGE     3

                    DATA ELEMENT
         FILE ID    CATALOGUE NO    DATA ELEMENT LENGTH    DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION

           MS           149                 2                      SD              SOUTH DAKOTA
           MS           149                 2                      TN              TENNESSEE
           MS           149                 2                      TT              TRUST TERRITORIES
           MS           149                 2                      TX              TEXAS
           MS           149                 2                      UT              UTAH
           MS           149                 2                      VA              VIRGINIA
           MS           149                 2                      VI              VIRGIN ISLANDS
           MS           149                 2                      VT              VERMONT
           MS           149                 2                      WA              WASHINGTON
           MS           149                 2                      WI              WISCONSIN
           MS           149                 2                      WV              WEST VIRGINIA
           MS           149                 2                      WY              WYOMING
           MS           149                 2                      01              EPA REGION I - BOSTON
           MS           149                 2                      02              EPA REGION II - NEW YORK
           MS           149                 2                      03              EPA REGION III - PHILADELPHIA
           MS           149                 2                      04              EPA REGION IV - ATLANTA
           MS           149                 2                      05              EPA REGION V - CHICAGO
           MS           149                 2                      06              EPA REGION VI - DALLAS
           MS           149                 2                      07              EPA REGION VII - KANSAS CITY
           MS           149                 2                      08              EPA REGION VIII - DENVER
           MS           149                 2                      09              EPA REGION IX - SAN FRANCISCO
           MS           149                 2                      10              EPA REGION X - SEATTLE
           MS           343                 2                      01              SINGLE SAMPLE MCL
           MS           343                 2                      02              AVERAGE MCL
           MS           343                 2                      03              REGULAR SAMPLING
           MS           343                 2                      04              CHECK (REPEAT) SAMPLING
           MS           343                 2                      05              STATE NOTIFICATION
           MS           343                 2                      06              PUBLIC NOTIFICATION
           MS           343                 2                      07              TREATMENT TECHNIQUES
           MS           343                 2                      08              V OR E COMPLIANCE SCHEDULE
           MS           343                 2                      09              RECORD KEEPING
           MS           343                 2                      10              OPERATIONS REPORT
           MS           454                 2                      01              LETTER TO PWS FROM STATE WSP
           MS           454                 2                      04              ADM.HEARING - PWS & STATE WSP
           MS           454                 2                      07              OTHER STATE ADM.PROCEDURE
           MS           454                 2                      10              INJUNCTION SOUGHT
           MS           454                 2                      13              FINE LEVIED ON PWS
           MS           454                 2                      16              OTHER CIVIL ACTION
           MS           454                 2                      19              EXPLORE ALT. SOURCES OF WATER
           MS           454                 2                      22              EXPLORE REGIONAL SYS. DEVELOP
           MS           454                 2                      25              FINANCIAL AID OBTAINED
           MS           454                 2                      28              TREATMENT SYSTEM DESIGNED
           MS           454                 2                      31              TREATMENT SYSTEM APPROVED
           MS           454                 2                      34              TREATMENT SYSTEM BUILT
           MS           454                 2                      37              PERIODIC MONITORING REQ'D.
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MSIS030                                   MODEL STATE INFORMATION SYSTEM
                                          STANDARD PROCESSING SUBSYSTEM
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                      DATA ELEMENT
          FILE ID     CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION

            OM            479                    1                       L                  LABORATORY OWNER
            OM            479                    1                       O                  OPERATOR
            OM            479                    1                       P                  WATER PURVEYOR
            OM            479                    1                       S                  SANITARY ENGINEER
            OM            479                    1                       W                  WATER SUPPLY OWNER
            OM            479                    1                       X                  OTHER
            OM            479                    1                       0                  OPERATOR
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                                         MODEL STATE INFORMATION SYSTEM
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                                                                                              PAGE    1
DATE 05/11/77                                   CODE VALUE TABLE

                        DATA ELEMENT
          FILE ID       CATALOGUE NO      DATA ELEMENT LENGTH      DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

            PW              159                   3                       001                  ADAMS
            PW              159                   3                       003                  ALEXANDER
            PW              159                   3                       005                  BOND
            PW              159                   3                       007                  BOONE
            PW              159                   3                       009                  BROWN
            PW              159                   3                       011                  BUREAU
            PW              159                   3                       013                  CALHOUN
            PW              159                   3                       015                  CARROLL
            PW              159                   3                       017                  CASS
            PW              159                   3                       019                  CHAMPAIGN
            PW              159                   3                       021                  CHRISTIAN
            PW              159                   3                       023                  CLARK
            PW              159                   3                       025                  CLAY
            PW              159                   3                       027                  CLINTON
            PW              159                   3                       029                  COLES
            PW              159                   3                       031                  COOK
            PW              159                   3                       033                  CRAWFORD
            PW              159                   3                       035                  CUMBERLAND
            PW              159                   3                       037                  DE KALB
            PW              159                   3                       039                  DE WITT
            PW              159                   3                       041                  DOUGLAS
            PW              159                   3                       043                  DE PAGE
            PW              159                   3                       045                  EDGAR
            PW              159                   3                       047                  EDWARDS
            PW              159                   3                       049                  EFFINGHAM
            PW              159                   3                       051                  FAYETTE
            PW              159                   3                       053                  FORD
            PW              159                   3                       055                  FRANKLIN
            PW              159                   3                       057                  FULTON
            PW              159                   3                       059                  GALLATIN
            PW              159                   3                       061                  GREENE
            PW              159                   3                       063                  GRUNDY
            PW              159                   3                       065                  HAMILTON
            PW              159                   3                       067                  HANCOCK
            PW              159                   3                       069                  HARDIN
            PW              159                   3                       071                  HENDERSON
            PW              159                   3                       073                  HENRY
            PW              159                   3                       075                  IROQUOIS
            PW              159                   3                       077                  JACKSON
            PW              159                   3                       079                  JASPER
            PW              159                   3                       081                  JEFFERSON
            PW              159                   3                       083                  JERSEY
            PW              159                   3                       085                  JO DAVIESS
            PW              159                   3                       087                  JOHNSON
            PW              159                   3                       089                  KANE
            PW              159                   3                       091                  KANKAKEE
            PW              159                   3                       093                  KENDALL
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CODE VALUE TABLE

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
PW	159	3	095	KNOX
PW	159	3	097	LAKE
PW	159	3	099	LA SALLE
PW	159	3	101	LAWRENCE
PW	159	3	103	LEE
PW	159	3	105	LIVINGSTON
PW	159	3	107	LOGAN
PW	159	3	109	MCDONOUGH
PW	159	3	111	MCHENRY
PW	159	3	113	MCLEAN
PW	159	3	115	MACON
PW	159	3	117	MACOUPIN
PW	159	3	119	MADISON
PW	159	3	121	MARION
PW	159	3	123	MARSHALL
PW	159	3	125	MASON
PW	159	3	127	MASSAC
PW	159	3	129	MENARD
PW	159	3	131	MERCER
PW	159	3	133	MONROE
PW	159	3	135	MONTGOMERY
PW	159	3	137	MORGAN
PW	159	3	139	MOULTRIE
PW	159	3	141	OGLE
PW	159	3	143	PEORIA
PW	159	3	145	PERRY
PW	159	3	147	PIATT
PW	159	3	149	PIKE
PW	159	3	151	POPE
PW	159	3	153	PULASKI
PW	159	3	155	PUTNAM
PW	159	3	157	RANDOLPH
PW	159	3	159	RICHLAND
PW	159	3	161	ROCK ISLAND
PW	159	3	163	ST CLAIR
PW	159	3	165	SALINE
PW	159	3	167	SANGAMON
PW	159	3	169	SCHUYLER
PW	159	3	171	SCOTT
PW	159	3	173	SHELBY
PW	159	3	175	STARK
PW	159	3	177	STEPHENSON
PW	159	3	179	TAZEWELL
PW	159	3	181	UNION
PW	159	3	183	VERMILLION
PW	159	3	185	WABASH
PW	159	3	187	WARREN

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                                        MODEL STATE INFORMATION SYSTEM
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                                               CODE VALUE TABLE
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                     DATA ELEMENT                                                         DATA ELEMENT DESCRIPTION
          FILE ID    CATALOGUE NO    DATA ELEMENT LENGTH    DATA ELEMENT VALUE

            PW           159                3                     189               WASHINGTON
            PW           159                3                     191               WAYNE
            PW           159                3                     193               WHITE
            PW           159                3                     195               WHITESIDE
            PW           159                3                     197               WILL
            PW           159                3                     199               WILLIAMSON
            PW           159                3                     201               WINNEBAGO
            PW           159                3                     203               WOODFORD
            PW           160                3                     017               CANADIAN INDIAN
            PW           160                3                     018               CAYUGA
            PW           160                3                     019               CAYUGA-SENECA
            PW           160                3                     020               CONFEDERATED TRIBES CHEHALIS
            PW           160                3                     027               CHICKASAW
            PW           160                3                     032               CHOCTAW
            PW           160                3                     037               COEUR D'ALENE
            PW           160                3                     042               CREE
            PW           160                3                     043               CREEK
            PW           160                3                     044               CROW
            PW           160                3                     076               MIAMI
            PW           160                3                     078               MISSOURI
            PW           160                3                     079               MISSOURI-OTOE
            PW           160                3                     091               OSAGE
            PW           160                3                     093               OTTAWA
            PW           160                3                     097               PAWNEE
            PW           160                3                     103               POTAWATOMIE
            PW           160                3                     140               SHAWNEE
            PW           160                3                     142               EASTERN SHAWNEE
            PW           160                3                     171               WINNEBAGO
            PW           196                1                     A                 SYSTEM ABANDONED
            PW           196                1                     D                 DUPLICATE PWS WITH ANOTHER ID
            PW           196                1                     M                 SYSTEM MERGED/CONSOLIDATED
            PW           196                1                     O                 OTHER
            PW           196                1                     P                 SYSTEM PURGED FROM INVENTORY
            PW           196                1                     R                 PWS REENTERED WITH NEW ID
            PW           196                1                     S                 SYSTEM DISCONTINUED
            PW           196                1                     0                 OTHER
            PW           200                2                     01                REGION 1  = ROCKFORD
            PW           200                2                     02                REGION 2  = AURORA
            PW           200                2                     03                REGION 3  = SPRINGFIELD
            PW           200                2                     04                REGION 4  = COLLINSVILLE
            PW           200                2                     05                REGION 5  = MARION
            PW           200                2                     3A                REGION 3A = CHAMPAIGN
            PW           201                2                     01                DISTRICT 1
            PW           201                2                     02                DISTRICT 2
            PW           201                2                     03                DISTRICT 3
            PW           201                2                     04                DISTRICT 4
            PW           201                2                     05                DISTRICT 5
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                                          MODEL STATE INFORMATION SYSTEM
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                      DATA ELEMENT
          FILE ID     CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE        DATA ELEMENT DESCRIPTION

            PW            201                   2                      06                DISTRICT 6
            PW            237                   1                      A                 AUTHORITY/COMMISION/DISTRICT
            PW            237                   1                      C                 CITY
            PW            237                   1                      F                 FEDERAL
            PW            237                   1                      I                 INVESTOR
            PW            237                   1                      M                 MUNICIPALITY
            PW            237                   1                      N                 COUNTY
            PW            237                   1                      O                 OTHER
            PW            237                   1                      S                 STATE
            PW            237                   1                      U                 UNKNOWN
            PW            237                   1                      0                 OTHER
            PW            237                   1                      1                 INVESTOR
            PW            246                   1                      E                 EMERGENCY SOURCE
            PW            246                   1                      I                 INTERIM SOURCE
            PW            246                   1                      O                 OTHER
            PW            246                   1                      P                 PERMANENT SOURCE
            PW            246                   1                      R                 RESERVE SOURCE
            PW            246                   1                      S                 SEASONAL SOURCE
            PW            246                   1                      0                 OTHER
            PW            246                   1                      1                 INTERIM SOURCE
            PW            247                   4                      0515              SALT RIVER
            PW            247                   4                      0516              GREEN RIVER
            PW            247                   4                      0517              WABASH RIVER
            PW            247                   4                      0518              EAST FORK WHITE RIVER
            PW            247                   4                      0519              WEST FORK WHITE RIVER
            PW            247                   4                      0520              CUMBERLAND RIVER
            PW            247                   4                      0521              OHIO RIVER MAIN STEM
            PW            247                   4                      0803              MENOMINEE
            PW            247                   4                      0804              CEDAR
            PW            247                   4                      0805              FORD
            PW            247                   4                      0806              ESCANABA
            PW            247                   4                      0807              RAPID
            PW            247                   4                      0808              WHITEFISH
            PW            247                   4                      0809              STURGEON
            PW            247                   4                      0810              FISHDAM
            PW            247                   4                      0811              MANISTIQUE
            PW            247                   4                      0816              BOARDMAN
            PW            247                   4                      0818              BETSIE
            PW            247                   4                      0823              WHITE
            PW            247                   4                      0828              GRAND
            PW            248                   3                      001               0394531 0401228
            PW            248                   3                      003               0370009 0372033
            PW            248                   3                      005               0384401 0390156
            PW            248                   3                      007               0420925 0433011
            PW            248                   3                      009               0395005 0400626
            PW            248                   3                      011               0410052 0423527
            PW            248                   3                      013               0385133 0392412
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MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM

CODE VALUE TABLE

FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
PW	248	3	015	0415556 0421219
PW	248	3	017	0395204 0400725
PW	248	3	019	0395241 0402331
PW	248	3	021	0392100 0404943
PW	248	3	023	0391005 0392908
PW	248	3	025	0383543 0395453
PW	248	3	027	0382447 0394408
PW	248	3	029	0392226 0404056
PW	248	3	031	0412753 0420936
PW	248	3	033	0385107 0391039
PW	248	3	035	0391021 0392246
PW	248	3	037	0413748 0420935
PW	248	3	039	0400301 0401653
PW	248	3	041	0393848 0405246
PW	248	3	043	0413959 0425928
PW	249	3	001	0905435 0923014
PW	249	3	003	0891034 0903039
PW	249	3	005	0891539 0903814
PW	249	3	007	0884205 0895625
PW	249	3	009	0903038 0915443
PW	249	3	011	0890952 0905106
PW	249	3	013	0902704 0915610
PW	249	3	015	0894107 0901940
PW	249	3	017	0895919 0913507
PW	249	3	019	0875545 0882842
PW	249	3	021	0890143 0903229
PW	249	3	023	0873214 0880111
PW	249	3	025	0881503 0894218
PW	249	3	027	0890837 0904227
PW	249	3	029	0875849 0882836
PW	249	3	031	0873126 0881640
PW	249	3	033	0873121 0885721
PW	249	3	035	0880111 0882841
PW	249	3	037	0883453 0895640
PW	249	3	039	0883453 0890829
PW	249	3	041	0875625 0882836
PW	249	3	043	0875524 0881640

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DATE 05/11/77                                   CODE VALUE TABLE

                         DATA ELEMENT
           FILE ID       CATALOGUE NO     DATA ELEMENT LENGTH     DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

             RG              044                   1                      C                  COLOR
             RG              044                   1                      D                  TDS
             RG              044                   1                      F                  FOAMING
             RG              044                   1                      H                  HEALTH
             RG              044                   1                      I                  IRON
             RG              044                   1                      L                  CHLORIDE
             RG              044                   1                      M                  MANGANESE
             RG              044                   1                      O                  ODOR
             RG              044                   1                      P                  PH
             RG              044                   1                      S                  SULFATE
             RG              044                   1                      T                  TASTE
             RG              044                   1                      U                  COPPER
             RG              044                   1                      V                  CORROSIVITY
             RG              044                   1                      Y                  HYDROGEN SULFIDE
             RG              044                   1                      Z                  ZINC
             RG              044                   1                      0                  ODOR
             RG              044                   1                      1                  IRON
             RG              044                   1                      2                  ZINC
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CODE VALUE TABLE

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FILE ID	DATA ELEMENT CATALOGUE NO	DATA ELEMENT LENGTH	DATA ELEMENT VALUE	DATA ELEMENT DESCRIPTION
VE	461	1	A	INTEREST IN V OR E EXPRESSED
VE	461	1	C	APPLICATION FOR V OR E REC'D
VE	461	1	E	STATE PROPOSES TO DENY V OR E
VE	461	1	G	STATE PROPOSES TO GRANT V OR E
VE	461	1	I	HEARING ON PROPOSAL SCHEDULED
VE	461	1	K	HEARING ON PROPOSAL HELD
VE	461	1	M	COMPLIANCE SCHEDULE PRESCRIBED
VE	461	1	O	HEARING ON SCHEDULE OFFERED
VE	461	1	Q	HEARING ON SCHEDULE HELD
VE	461	1	R	ADDITIONAL INFORMATION DESIRED
VE	461	1	S	V OR E GRANTED
VE	461	1	T	V OR E DENIED
VE	461	1	U	STATE SETS MONITORING REQ'M
VE	461	1	V	EPA SETS MONITORING REQ'M
VE	461	1	W	NOTIFICATION GIVEN TO PUBLIC
VE	461	1	X	OTHER
VE	461	1	Y	NOTIFICATION GIVEN TO EPA
VE	461	1	Z	PENDING DELETION
VE	461	1	0	HEARING ON SCHEDULE OFFERED
VE	461	1	1	HEARING ON PROPOSAL SCHEDULED
VE	465	3	020	AERATION
VE	465	3	040	PRECHLORINATION
VE	465	3	060	COAGULATION
VE	465	3	080	SEDIMENTATION
VE	465	3	100	FILTRATION
VE	465	3	120	CORROSION CONTROL
VE	465	3	140	SOFTENING
VE	465	3	160	TASTE AND ODOR CONTROL
VE	465	3	180	IRON REMOVAL
VE	465	3	200	AMMONIATION
VE	465	3	220	FLORIDE ADJUSTMENT
VE	465	3	240	DISINFECTION
VE	466	3	001	LIME COAGULATION
VE	466	3	003	PRECIPITATION
VE	466	3	005	SEQUESTRATION
VE	466	3	007	STRAINING
VE	466	3	009	SCREENING
VE	466	3	011	DESALINATION
VE	466	3	013	REVERSE OSMOSIS
VE	466	3	015	MANGANESE REMOVAL
VE	466	3	017	ACTIVATED CARBON (GRANULAR)
VE	466	3	019	ACTIVATED CARBON (POWDERED)
VE	466	3	021	FLUORIDATION
VE	466	3	023	FLUORIDE REMOVAL
VE	466	3	025	U.V. DISINFECTION
VE	466	3	027	OZONE DISINFECTION
VE	466	3	029	IODINE DISINFECTION

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                         DATA ELEMENT
         FILE ID         CATALOGUE NO         DATA ELEMENT LENGTH       DATA ELEMENT VALUE          DATA ELEMENT DESCRIPTION

           VE                466                       3                        031               CHLORINE DISINFECTION
           VE                466                       3                        033               CHLORINE DIOXIDE
           VE                466                       3                        035               BREAKPOINT CHLORINATION
           VE                466                       3                        037               POST-CHLORINATION
           VE                466                       3                        038               SUPER-CHLORINATION
           VE                466                       3                        041               CARBON ABSORPTION
           VE                466                       3                        043               ELECTRODIALYSIS
           VE                466                       3                        045               DISTILLATION
           VE                466                       3                        047               RE-CARBONATION
           VE                466                       3                        049               ION EXCHANGE
           VE                466                       3                        051               FLOCCULATION
           VE                466                       3                        053               PH ADJUSTMENT
           VE                466                       3                        055               CHEMICAL OXIDATION
           VE                466                       3                        057               ABSORBING AGENTS
           VE                466                       3                        998               OTHER
           VE                466                       3                        999               NO TREATMENT REQUIRED
           VE                469                       2                        01                CANNOT COMPLY AFTER TREATMENT
           VE                469                       2                        03                CANNOT AFFORD FACILITY CONST.
           VE                469                       2                        05                FUNDS PENDING
           VE                469                       2                        07                FACILITY CONST. PENDING
           VE                469                       2                        09                UNABLE TO AFFORD TREATMENT
           VE                469                       2                        11                TREATMENT UNNECESSARY
           VE                469                       2                        13                TREATMENT IMPRACTICAL
           VE                469                       2                        99                OTHER
           VE                476                       1                        2                 DELETE MILESTONE
           VE                476                       1                        1                 FACILITY CONSTRUCTION NOT COMP
           VE                476                       1                        3                 NEW WATER SOURCE NOT FOUND
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                              RECORD INFORMATION                                NAME INFORMATION
                                  START POSITION          FIELD LENGTH
        FILE ID   CATALOGUE NO   TRANSACTION / FILE     TRANSACTION / FILE      MNEMONIC NAME            HISTORY CODE

          EA          430           01       0001         05        05          EA-CASE-ID                    Y
          EA          431           09       0006         12        12          EA-CASE-RE                    Y
          EA          432           21       0018         30        30          EA-CASENAM                    Y
          EA          433           51       0048         06        05          EA-ACT-DAT                    Y
          EA          434           08       0053         01        01          EA-CLOSE                      Y
          EA          435           08       0054         01        01          EA-PLNTYPE                    Y
          EA          436           09       0055         30        30          EA-PLNNAME                    Y
          EA          437           39       0085         01        01          EA-DEFTYPE                    Y
          EA          438           40       0086         30        30          EA-DEFNAME                    Y
          EA          439           08       0116         07        07          EA-ORDERNO                    Y
          EA          440           15       0123         06        05          EA-ORDATE                     Y
          EA          441           21       0128         07        07          EA-PERNO                      Y
          EA          442           28       0135         06        05          EA-PERDATE                    Y
          EA          443           58       0140         07        07          EA-PWS-ID                     Y
          EA          444           65       0147         02        02          EA-STATE                      Y
          EA          445           10       ****         06        05          EA-VIL-DAT                    Y
          EA          446           16       ****         04        04          EA-CON-ID                     Y
          EA          447           08       ****         02        02          EA-VIOL-TP                    Y
          EA          448           08       ****         30        30          EA-ABSTRAC                    Y
          EA          449           57       0559         01        01          EA-LEGALST                    Y
          EA          450           00       0560         00        05          EA-LST-UP                     Y
          EA          451           00       0565         00        02          EA-MISTONE                    Y
          EA          452           10       ****         06        05          EA-TAR-DT                     Y
          EA          453           16       ****         06        05          EA-ATT-DAT                    Y
          EA          454           08       ****         02        02          EA-MIL-COD                    Y
          EA          904           06       ****         02        02          EA-TRAN-CD                    N
          EA          907           08       ****         01        01          EA-CRDT-CD                    N
          EA          911           22       ****         01        01          EA-DEL-CD                     N
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                             RECORD INFORMATION                                         NAME INFORMATION
                                   START POSITION          FIELD LENGTH
         FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE           MNEMONIC NAME              HISTORY CODE

           LB          319           01        0001        05        05              LB-ID                          N
           LB          320           06        0006        01        01              LB-CONTGRP                     N
           LB          321           07        0007        01        01              LB-OW-TYPE                     N
           LB          322           08        0008        30        30              LB-NAME                        N
           LB          323           38        0038        06        05              LB-EXP-DT                      N
           LB          324           00        0043        00        06              LB-REL-REC                     N
           LB          325           00        0049        00        02              LB-METHCNT                     N
           LB          820           07        ****        72        03              LB-METHOD                      N
           LB          914           79        ****        02        02              TRAN-CODE
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                                                  MODEL STATE INFORMATION SYSTEM
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                                   RECORD INFORMATION                                         NAME INFORMATION
                                           START POSITION           FIELD LENGTH
        FILE ID    CATALOGUE NO     TRANSACTION / FILE      TRANSACTION / FILE          MNEMONIC NAME                  HISTORY CODE

          OM            478              01         0001          05          05           OM-ADS-ID                          Y
          OM            479              08         0006          01          01           OM-ADS-TYP                         Y
          UM            480              09         0007          30          30           OM-ADS-NAM                         Y
          OM            481              39         0037          30          30           OM-ADS-STR                         Y
          OM            482              08         0067          30          30           OM-ADS-CTY                         Y
          OM            483              38         0097          02          02           OM-ADS-STA                         Y
          OM            484              40         0099          05          05           OM-ADS-ZIP                         Y
          OM            485              45         0104          03          03           OM-AREA-CD                         Y
          OM            486              48         0107          07          07           OM-PH-NUM                          Y
          OM            487              00         0114          00          05           OM-LST-UPD                         Y
          OM            488              08         0119          07          07           OM-CER-NUM                         Y
          OM            489              15         0126          07          07           OM-PWS-ID                          Y
          OM            490              22         ****          06          01           OM-OP-CLS                          Y
          OM            491              28         0139          06          05           OM-RNL-DT                          Y
          OM            903              06         ****          02          02           OM-TRAN-CD                         N
          OM            908              08         ****          01          01           OM-CRDT-CD                         N
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                                    MODEL STATE INFORMATION SYSTEM
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                         RECORD INFORMATION                                NAME INFORMATION
                             START POSITION          FIELD LENGTH
   FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE       MNEMONIC NAME              HISTORY CODE

     PH          310           00        0001         00       07         PH-PHS-ID                       Y
     PH          311           00        0008         00       03         PH-CAT-NO                       Y
     PH          312           00        0011         00       05         PH-CUR-UP                       Y
     PH          313           00        0016         00       30         PH-PH-NAME                      Y
     PH          314           00        0046         00       02         PH-S-REGN                       Y
     PH          315           00        0048         00       02         PH-S-DIST                       Y
     PH          316           00        0050         00       05         PH-LBT-UP                       Y
     PH          317           00        0055         00       30         PH-OLD-VAL                      Y
     PH          318           00        0085         00       30         PH-NEW-VAL                      Y
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                                         MODEL STATE INFORMATION SYSTEM
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                              RECORD INFORMATION                                  NAME INFORMATION
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       FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE      MNEMONIC NAME              HISTORY CODE

         PS          399           01        0001          07        07        PS-PHS-ID                     N
         PS          400           10        0010          04        04        PS-CONTD                      N
         PS          401           28        0014          03        03        PS-SAMPLID                    N
         PS          402           37        0017          01        01        PS-SAMPLTP                    N
         PS          403           31        0018          06        05        PS-SAMPLDT                    N
         PS          404           38        0023          04        04        PS-SAMPLTM                    N
         PS          405           17        0027          10        10        PS-SAMPLKY                    N
         PS          406           00        0037          01        01        PS-RFCDTYP                    N
         PS          407           14        0049          03        03        PS-AN-METH                    N
         PS          408           42        0052          05        05        PS-LAB-ID                     N
         PS          409           17        0058          04        05        PS-D-ANRSL                    N
         PS          410           21        0063          01        01        PS-D-ANDEC                    N
         PS          411           22        0064          06        05        PS-D-ANDTE                    N
         PS          412           23        0069          04        04        PS-S-HIRSL                    N
         PS          413           27        0073          01        01        PS-S-HIDEC                    N
         PS          414           28        0074          04        04        PS-S-LORSL                    N
         PS          415           32        0078          01        01        PS-S-LODEC                    N
         PS          416           33        0079          04        04        PS-S-MNRSL                    N
         PS          417           37        0083          01        01        PS-S-MNDEC                    N
         PS          418           17        0084          03        03        PS-REQ-SPL                    N
         PS          419           20        0087          03        03        PS-ACT-SPL                    N
         PS          420           49        0090          06        05        PS-PRD-STR                    N
         PS          421           55        0095          06        05        PS-PRD-END                    N
         PS          422           73        0118          01        01        PS-CHK-FED                    N
         PS          423           74        0119          01        01        PS-CHK-STA                    N
         PS          424           75        0120          03        03        PS-CHK-NUM                    N
         PS          425           38        0129          04        04        PS-FED-VIO                    N
         PS          426           42        0133          04        04        PS-STA-VIO                    N
         PS          427           46        0137          03        03        PS-VIO-DUR                    N
         PS          428           78        0140          01        01        PS-NOTIPUB                    N
         PS          429           79        0141          01        01        PS-NOTISTA                    N
         PS          817           08        0008          02        02        PS-TRAN-CD                    N
         PS          818           00        0142          00        01        PS-ERR-IND                    N
         PS          819           00        0057          00        01        PS-LB-OWN                     N
         PS          900           61        0017          01        01        PS-SMPLTP                     N
         PS          901           62        0018          06        05        PS-SMPLDT                     N
         PS          902           68        0052          05        05        PS-LB-ID                      N
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                                      MODEL STATE INFORMATION SYSTEM
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     FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE    MNEMONIC NAME           HISTORY CODE

       PW          145           01      0001          07      07        PW-ID                        N
       PW          146           10      0008          30      30        PW-OWNA                      Y
       PW          147           40      0038          30      30        PW-PL-STRT                   Y
       PW          148           10      0068          30      30        PW-PL-CITY                   Y
       PW          149           40      0098          02      02        PW-PL-STAT                   Y
       PW          150           42      0100          05      05        PW-PL-ZIP                    Y
       PW          151           10      0105          30      30        PW-MA-NAME                   Y
       PW          152           40      0135          30      30        PW-MA-STRT                   Y
       PW          153           10      0165          30      30        PW-MA-CITY                   Y
       PW          154           40      0195          02      02        PW-MA-STAT                   Y
       PW          155           42      0197          05      05        PW-MA-ZIP                    Y
       PW          156           47      0202          03      03        PW-MA-ARCU                   Y
       PW          157           50      0205          07      07        PW-MA-PNUM                   Y
       PW          158           10      0212          15      15        PW-PL-ACTY                   N
       PW          159           25      0227          03      03        PW-PL-ACNT                   N
       PW          160           28      0230          03      03        PW-PL-RESR                   N
       PW          161           31      0233          01      01        PW-PL-RESI                   N
       PW          162           32      0234          01      01        PW-PL-COMP                   N
       PW          163           33      0235          01      01        PW-PL-RECR                   N
       PW          164           34      0236          01      01        PW-PL-MOMO                   N
       PW          165           35      0237          01      01        PW-PL-INST                   N
       PW          166           36      0238          01      01        PW-PL-SCHL                   N
       PW          167           37      0239          01      01        PW-PL-MOTL                   N
       PW          168           38      0240          01      01        PW-PL-REST                   N
       PW          169           39      0241          01      01        PW-PL-SSTA                   N
       PW          170           40      0242          01      01        PW-PL-CAMP                   N
       PW          171           41      0243          01      01        PW-PL-PIC                    N
       PW          172           42      0244          01      01        PW-PL-LODG                   N
       PW          173           43      0245          01      01        PW-PL-MARI                   N
       PW          174           44      0246          01      01        PW-PL-SKI                    N
       PW          175           45      0247          01      01        PW-PL-BATH                   N
       PW          176           46      0248          01      01        PW-PL-VCTR                   N
       PW          177           47      0249          01      01        PW-PL-HWY                    N
       PW          178           48      0250          01      01        PW-PL-AIR                    N
       PW          179           49      0251          01      01        PW-PL-OTHR                   N
       PW          180           10      0252          07      07        PW-PL-CNUM                   Y
       PW          181           17      0259          01      01        PW-PL-CARR                   Y
       PW          182           18      0260          01      01        PW-PL-TYPE                   N
       PW          183           19      0261          09      09        PW-PL-POPL                   Y
       PW          184           28      0270          07      07        PW-PL-SNUM                   Y
       PW          185           35      0277          07      07        PW-PL-MNUM                   Y
       PW          186           10      0284          10      10        PW-PL-AVPR                   Y
       PW          187           20      0294          10      10        PW-PL-DECA                   N
       PW          188           30      0304          10      10        PW-PL-EMER                   Y
       PW          189           40      0314          10      10        PW-PL-STCA                   Y
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                                          MODEL STATE INFORMATION SYSTEM
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                          RECORD INFORMATION                                        NAME INFORMATION
                                START POSITION           FIELD LENGTH
         FILE ID   CATALOGUE NO   TRANSACTION / FILE     TRANSACTION / FILE       MNEMONIC NAME              HISTORY CODE

           PW          190          50        0324        10        10          PW-PL-MAXP                     Y
           PW          191          10        0334        04        04          PW-PL-REGN                     Y
           PW          192          14        0338        06        05          PW-PL-SURV                     Y
           PW          193          20        0343        02        02          PW-PL-CYCL                     N
           PW          194          22        0345        01        01          PW-PL-ACTV                     N
           PW          195          23        0346        06        05          PW-PL-DDAT                     N
           PW          196          29        0351        01        01          PW-PL-DREA                     N
           PW          197          30        0352        12        12          PW-PL-MANU                     N
           PW          198          10        0364        02        02          PW-S-CODE                      Y
           PW          199          12        0366        01        01          PW-S-REGE                      N
           PW          200          13        0367        02        02          PW-S-REGN                      N
           PW          201          15        0369        02        02          PW-S-DIST                      N
           PW          202          17        0371        01        01          PW-S-BFLG                      Y
           PW          203          18        0372        01        01          PW-S-MONT                      N
           PW          204          19        0373        03        03          PW-S-NSAM                      N
           PW          205          22        0376        04        04          PW-S-SRGN                      N
           PW          206          26        0380        04        04          PW-S-SEND                      N
           PW          207          30        0384        01        01          PW-S-MDCK                      N
           PW          208          31        0385        03        03          PW-S-NSPFQ                     N
           PW          209          34        0388        01        01          PW-S-MCKS                      N
           PW          210          35        0389        02        02          PW-S-CLOR                      N
           PW          211          37        0391        01        01          PW-S-TFLG                      Y
           PW          212          38        0392        02        02          PW-S-TRUN                      N
           PW          213          11        ****        04        04          PW-S-CONID                     Y
           PW          214          15        ****        03        03          PW-S-SPFQ                      Y
           PW          215          10        0422        04        04          PW-S-ORBGN                     N
           PW          216          14        0426        04        04          PW-S-OREND                     N
           PW          217          19        0430        03        03          PW-S-ATEM                      N
           PW          218          22        0433        04        04          PW-S-NITR                      N
           PW          219          26        0437        01        01          PW-S-RFLG                      Y
           PW          220          27        0438        01        01          PW-S-RMON                      N
           PW          221          28        0439        02        02          PW-S-BETA                      N
           PW          222          30        0441        01        01          PW-S-NUCL                      N
           PW          223          31        0442        01        01          PW-S-FATY1                     N
           PW          224          12        ****        04        04          PW-S-FACON                     N
           PW          225          16        ****        02        02          PW-S-CFREQ                     N
           PW          226          10        0504        02        02          PW-S-GALP                      N
           PW          227          12        0506        02        02          PW-S-RADM                      N
           PW          228          14        0508        01        01          PW-S-NUMSP                     N
           PW          229          18        0509        01        01          PW-S-GWATR                     N
           PW          230          15        0510        01        01          PW-S-RREQ                      N
           PW          231          16        0511        04        04          PW-S-LAST                      Y
           PW          232          20        0515        01        01          PW-S-ENGM                      N
           PW          233          00        0516        00        17          PW-S-RESV                      N
           PW          234          00        0616        00        05          PW-LST-UP                      N
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                                         MODEL STATE INFORMATION SYSTEM
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                              RECORD INFORMATION                                    NAME INFORMATION
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          FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE         MNEMONIC NAME            HISTORY CODE

            PW          235           11       ****         05       05            PW-LA-ID                      N
            PW          236           16       ****         01       01            PW-LA-CFLG                    Y
            PW          237           47       0651         01       01            PW-OW-TYPE                    Y
            PW          238           11       ****         04       04            PW-VE-CTAM                    N
            PW          239           15       ****         05       05            PW-VE-MCL                     N
            PW          240           20       ****         01       01            PW-VE-DEC                     N
            PW          241           21       ****         03       03            PW-VE-AMF                     N
            PW          242           00       0705         00       02            PW-PL-SONM                    N
            PW          243           12       ****         15       15            PW-PL-SONA                    Y
            PW          244           27       ****         01       01            PW-PL-SOCO                    Y
            PW          245           28       ****         02       02            PW-PL-WELL                    Y
            PW          246           30       ****         01       01            PW-PL-AVAL                    Y
            PW          247           31       ****         04       04            PW-PL-BASN                    Y
            PW          248           35       ****         07       07            PW-PL-LATI                    Y
            PW          249           42       ****         07       07            PW-PL-LONG                    Y
            PW          250           49       ****         07       07            PW-PL-SLID                    Y
            PW          251           56       ****         01       01            PW-PL-AERA                    Y
            PW          252           57       ****         01       01            PW-PL-PREC                    Y
            PW          253           58       ****         01       01            PW-PL-CUAG                    Y
            PW          254           59       ****         01       01            PW-PL-SEDI                    Y
            PW          255           60       ****         01       01            PW-PL-FILT                    Y
            PW          256           61       ****         01       01            PW-PL-CORR                    Y
            PW          257           62       ****         01       01            PW-PL-SOFT                    Y
            PW          258           63       ****         01       01            PW-PL-TAST                    Y
            PW          259           64       ****         01       01            PW-PL-IRON                    Y
            PW          260           65       ****         01       01            PW-PL-AMMO                    Y
            PW          261           66       ****         01       01            PW-PL-FLOR                    Y
            PW          262           67       ****         01       01            PW-PL-DISI                    Y
            PW          263           68       ****         01       01            PW-PL-OTHE                    Y
            PW          264           00       ****         00       03            PW-PL-RESE                    Y
            PW          701           42       0708         01       01            PW-PL-COIN                    N
            PW          702           32       0843         01       01            PW-S-FATY2                    N
            PW          906           08       ****         02       02            PW-TRAN-CD                    N
            PW          910           10       ****         01       01            PW-CRDT-CD                    N
            PW          912           10       ****         01       01            PW-OCCUR1                     N
            PW          913           10       ****         02       02            PW-OCCUR2                     N
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                                        MODEL STATE INFORMATION SYSTEM
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                         RECORD INFORMATION                                  NAME INFORMATION
                              START POSITION          FIELD LENGTH
       FILE ID   CATALOGUE NO   TRANSACTION / FILE    TRANSACTION / FILE     MNEMONIC NAME           HISTORY CODE

         RG         001            01        0001       04        04         RG-CONID                    N
         RG         002            05        0005       02        02         RG-A-RGLVL                  N
         RG         003            07        0007       11        15         RG-A-CONAM                  N
         RG         004            18        0022       06        05         RG-A-EFFDT                  N
         RG         005            24        0027       03        03         RG-A-M-GRA                  N
         RG         006            27        0030       03        03         RG-A-M-CHR                  N
         RG         007            30        0033       03        03         RG-A-GAORS                  N
         RG         008            33        0036       03        03         RG-A-GAIRS                  N
         RG         009            36        0039       03        03         RG-A-R6FRS                  N
         RG         010            39        0042       03        03         RG-A-R6ANM                  N
         RG         011            42        0045       01        01         RG-A-NUMBP                  N
         RG         012            43        0046       01        01         RG-A-MINFQ                  N
         RG         013            44        0047       02        02         RG-A-INIPD                  N
         RG         014            46        0049       02        02         RG-A-FRACT                  N
         RG         015            48        0051       02        02         RG-A-MINVF                  N
         RG         016            50        0053       01        01         RG-A-AC#BP                  N
         RG         017            51        0054       01        01         RG-A-CNCOB                  N
         RG         019            05        0005       02        02         RG-B-RGLVL                  N
         RG         020            07        0007       10        15         RG-B-CONAM                  N
         RG         021            17        0022       06        05         RG-B-EFFDT                  N
         RG         022            23        0027       02        02         RG-B-ANMCL                  N
         RG         023            25        0029       05        05         RG-B-TRISC                  N
         RG         024            30        0034       03        03         RG-B-STRSC                  N
         RG         025            33        0037       03        03         RG-B-MBENN                  N
         RG         026            36        0040       03        03         RG-B-MRECN                  N
         RG         027            39        0043       03        03         RG-B-SAC1C                  N
         RG         028            42        0046       01        01         RG-B-CNCOB                  N
         RG         029            43        0047       01        01         RG-B-MONGD                  N
         RG         030            44        0048       01        01         RG-B-AVCOM                  N
         RG         031            45        0049       06        06         RG-B-MNPOP                  N
         RG         032            51        0055       01        01         RG-B-NNMSP                  N
         RG         033            52        0056       01        01         RG-B-NNMFQ                  N
         RG         034            53        0057       02        02         RG-B-NVMFQ                  N
         RG         035            55        0059       02        02         RG-B-CNIOS                  N
         RG         036            57        0061       02        02         RG-B-CNSTS                  N
         RG         037            59        0063       02        02         RG-B-CIOMF                  N
         RG         038            61        0065       02        02         RG-B-CSTMF                  N
         RG         039            63        0067       02        02         RG-B-CVMFQ                  N
         RG         040            65        0069       02        02         RG-B-CIOSP                  N
         RG         042            05        0005       02        02         RG-C-RGLVL                  N
         RG         043            07        0007       11        15         RG-C-CONAM                  N
         RG         044            18        0022       01        01         RG-C-RSNCO                  N
         RG         045            19        0023       06        06         RG-C-MCLUN                  N
         RG         046            25        0029       06        06         RG-C-MCL                    N
         RG         047            31        0035       01        01         RG-C-MCLDC                  N
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                                 RECORD INFORMATION                              NAME INFORMATION
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         FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE        MNEMONIC NAME             HISTORY CODE

           RG         048             32      0036          05      05           RG-C-MCLOW                     N
           RG         049             37      0041          01      01           RG-C-MCLOD                     N
           RG         050             38      0042          05      05           RG-C-MCLHI                     N
           RG         051             43      0047          01      01           RG-C-MCLHO                     N
           RG         052             44      0048          01      01           RG-C-CKSAM                     N
           RG         053             45      0049          01      01           RG-C-SEACD                     N
           RG         054             46      0050          01      01           RG-C-SPECD                     N
           RG         055             47      0051          02      02           RG-C-MINTM                     N
           RG         056             49      0053          02      02           RG-C-CHKPD                     N
           RG         057             51      0055          06      05           RG-C-CFFDT                     N
           RG         058             57      0060          01      01           RG-C-CGRYR                     N
           RG         059             58      0061          04      04           RG-C-COSPF                     N
           RG         060             62      0065          04      04           RG-C-CGVFQ                     N
           RG         061             66      0069          02      02           RG-C-CGMNG                     N
           RG         062             68      0071          01      01           RG-C-CSRYR                     N
           RG         063             69      0072          04      04           RG-C-CSSPF                     N
           RG         064             73      0076          04      04           RG-C-CSVFQ                     N
           RG         065             77      0080          02      02           RG-C-CSMNG                     N
           RG         066             51      0082          06      05           RG-C-NEFDT                     N
           RG         067             57      0087          01      01           RG-C-NGRYR                     N
           RG         068             58      0088          04      04           RG-C-NOSPF                     N
           RG         069             62      0092          04      04           RG-C-NGVFQ                     N
           RG         070             66      0096          02      02           RG-C-NGMNG                     N
           RG         071             68      0098          01      01           RG-C-NSRYR                     N
           RG         072             69      0099          04      04           RG-C-NSSPF                     N
           RG         073             73      0103          04      04           RG-C-NSVFQ                     N
           RG         074             77      0107          02      02           RG-C-NSMNG                     N
           RG         076             05      0005          02      02           RG-E-RGLVL                     N
           RG         077             07      0007          01      01           RG-E-TRLID                     N
           RG         078             08      0008          06      05           RG-E-EFFDT                     N
           RG         079             14      0013          15      15           RG-E-CONAM                     N
           RG         080             29      0028          06      06           RG-E-ANCON                     N
           RG         081             35      0034          04      04           RG-E-DETLM                     N
           RG         082             39      0038          05      01           RG-E-NPPCD                     N
           RG         084             05      0005          02      02           RG-F-RGLVL                     N
           RG         085             07      0007          01      01           RG-F-TRLID                     N
           RG         086             08      0008          03      03           RG-F-TRPLO                     N
           RG         087             11      0011          03      03           RG-F-TRPHI                     N
           RG         088             14      0014          03      03           RG-F-TRCLO                     N
           RG         089             17      0017          03      03           RG-F-TRCHI                     N
           RG         090             20      0020          06      06           RG-F-TRMCL                     N
           RG         091             26      0026          03      03           RG-F-RRFLO                     N
           RG         092             29      0029          03      03           RG-F-RRFHI                     N
           RG         093             32      0032          03      03           RG-F-RRCLO                     N
           RG         094             35      0035          03      03           RG-F-RRCHI                     N
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                                             MODEL STATE INFORMATION SYSTEM
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                                RECORD INFORMATION                                     NAME INFORMATION
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      FILE ID    CATALOGUE NO    TRANSACTION / FILE    TRANSACTION / FILE           MNEMONIC NAME              HISTORY CODE

        RG           096              05     0005         02       02              RG-M-RGLVL                      N
        RG           097              07     0007         08       15              RG-M-CONAM                      N
        RG           098              15     0022         06       05              RG-M-EFFDT                      N
        RG           099              21     0027         02       02              RG-M-MF-BM                      N
        RG           100              23     0029         02       02              RG-M-MF-MT                      N
        RG           101              25     0031         02       02              RG-M-MF-PS                      N
        RG           102              27     0033         02       02              RG-M-MF-MR                      N
        RG           103              29     0035         02       02              RG-M-MF-MC                      N
        RG           104              31     0037         02       02              RG-M-FT-BM                      N
        RG           105              33     0039         02       02              RG-M-FT-MT                      N
        RG           106              35     0041         02       02              RG-M-FT-PS                      N
        RG           107              37     0043         02       02              RG-M-FT-MR                      N
        RG           108              39     0045         02       02              RG-M-FT-MC                      N
        RG           109              41     0047         02       02              RG-M-FM-BM                      N
        RG           110              43     0049         02       02              RG-M-FM-MT                      N
        RG           111              45     0051         02       02              RG-M-FM-PS                      N
        RG           112              47     0053         02       02              RG-M-FM-MR                      N
        RG           113              49     0055         02       02              RG-M-FM-MC                      N
        RG           114              51     0057         01       01              RG-M-RQMAX                      N
        RG           115              52     0058         01       01              RG-M-RQSPD                      N
        RG           116              53     0059         01       01              RG-M-CKCDS                      N
        RG           117              54     0060         01       01              RG-M-CKMNP                      N
        RG           118              55     0061         02       02              RG-M-CKMCB                      N
        RG           119              57     0063         02       02              RG-M-C-LEU                      N
        RG           120              59     0065         02       02              RG-M-C-MXP                      N
        RG           121              61     0067         02       02              RG-M-C-MCL                      N
        RG           122              63     0069         02       02              RG-M-C-MXT                      N
        RG           123              65     0071         06       05              RG-M-NEFDT                      N
        RG           124              71     0076         01       01              RG-M-NSEAS                      N
        RG           125              72     0077         01       01              RG-M-NPERD                      N
        RG           126              73     0078         02       02              RG-M-NSPFQ                      N
        RG           128              05     0005         02       02              RG-P-RGLVL                      N
        RG           129              07     0007         01       01              RG-P-TALID                      N
        RG           130              08     0008         09       09              RG-P-T-FRM                      N
        RG           131              17     0017         09       09              RG-P-T-TOP                      N
        RG           132              26     0026         03       03              RG-P-T-FRQ                      N
        RG           134              05     0005         02       02              RG-T-RGLVL                      N
        RG           135              07     0007         09       15              RG-T-CONAM                      N
        RG           136              16     0022         02       02              RG-T-MOMCL                      N
        RG           137              18     0024         02       02              RG-T-CNMCL                      N
        RG           138              20     0026         02       02              RG-T-CNSPL                      N
        RG           139              22     0028         06       05              RG-T-EFFDT                      N
        RG           140              28     0033         01       01              RG-T-ALLSR                      N
        RG           141              29     0034         01       01              RG-T-RPTIN                      N
        RG           142              30     0035         03       03              RG-T-CSPFQ                      N
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                                          MODEL STATE INFORMATION SYSTEM
MSIS030                                   STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                   DATA ELEMENT TABLE                                      PAGE     4

                         RECORD INFORMATION                                        NAME INFORMATION
                                    START POSITION          FIELD LENGTH
        FILE ID    CATALOGUE NO    TRANSACTION / FILE    TRANSACTION / FILE       MNEMONIC NAME          HISTORY CODE

           RG          143               33      0038         03        03          RG-T-NSPFQ                N
           RG          144               36      0041         02        02          RG-T-MRSPL                N
           RG          914               79      ****         02        02          TRAN-CODE                 M
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                                MODEL STATE INFORMATION SYSTEM
MSIS030                         STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                        DATA ELEMENT TABLE                                   PAGE    1

                        RECORD INFORMATION                              NAME INFORMATION
                           START POSITION          FIELD LENGTH
FILE ID   CATALOGUE NO  TRANSACTION / FILE    TRANSACTION / FILE       MNEMONIC NAME          HISTORY CODE

  SA          356           01      0001         07      07            SA-PHS-ID                   N
  SA          357           10      0010         04      04            SA-CONTD                    N
  SA          358           00      0014         00      03            SA-SAMPLID                  N
  SA          359           00      0017         00      01            SA-SAMPLTP                  N
  SA          360           00      0018         00      05            SA-SAMPLDT                  N
  SA          361           00      0023         00      04            SA-SAMPLTM                  N
  SA          362           17      0027         10      10            SA-SAMPLKY                  N
  SA          363           00      0037         00      01            SA-RECDTYP                  N
  SA          364           00      0038         01      01            SA-PHS-TYP                  N
  SA          365           00      0039         00      09            SA-POP-SRV                  N
  SA          366           00      0048         00      01            SA-SOURCE                   N
  SA          367           14      0049         03      03            SA-AN-METH                  N
  SA          368           00      0052         00      05            SA-LAB-ID                   N
  SA          369           00      0057         00      01            SA-LAB-OWN                  N
  SA          370           00      0058         00      05            SA-D-ANRSL                  N
  SA          371           00      0063         00      01            SA-D-ANDEC                  N
  SA          372           00      0064         00      05            SA-D-ANDTE                  N
  SA          373           00      0069         00      04            SA-S-HIRSL                  N
  SA          374           00      0073         00      01            SA-S-HIDEC                  N
  SA          375           00      0074         00      04            SA-S-LORSL                  N
  SA          376           00      0078         00      01            SA-S-LODEC                  N
  SA          377           00      0079         00      04            SA-S-MNRSL                  N
  SA          378           00      0083         00      01            SA-S-MNDEC                  N
  SA          379           00      0084         00      03            SA-REQ-SPL                  N
  SA          380           00      0087         00      03            SA-ACT-SPL                  N
  SA          381           00      0090         00      05            SA-PRD-STR                  N
  SA          382           00      0095         00      05            SA-PRD-END                  N
  SA          383           00      0100         00      05            SA-RGLRSPL                  N
  SA          384           00      0105         00      05            SA-SAMPLCT                  N
  SA          385           00      0110         00      05            SA-SAMPLDU                  N
  SA          386           00      0115         00      03            SA-AIR-TMP                  N
  SA          387           00      0118         00      01            SA-CHK-FED                  N
  SA          388           00      0119         00      01            SA-CHK-STA                  N
  SA          389           00      0120         00      03            SA-CHK-NUM                  N
  SA          390           00      0123         00      05            SA-VAR-MCL                  N
  SA          391           00      0128         00      01            SA-VAR-DEC                  N
  SA          392           00      0129         00      04            SA-FED-VIO                  N
  SA          393           00      0133         00      04            SA-STA-VIO                  N
  SA          394           00      0137         00      03            SA-VIO-DUR                  N
  SA          395           00      0140         00      01            SA-NOTIPUB                  N
  SA          396           00      0141         00      01            SA-NOTISTA                  N
  SA          397           00      0193         00      01            SA-MCLVIFL                  N
  SA          398           00      0194         00      05            SA-MCLVFVL                  N
  SA          407           00      0144         00      02            SA-REGION                   N
  SA          408           00      0146         00      02            SA-DISTRIC                  N
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                                                MODEL STATE INFORMATION SYSTEM
MSI8030                                         STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                        DATA ELEMENT TABLE                                          PAGE     2


                        RECORD INFORMATION                                      NAME INFORMATION
                                 START POSITION           FIELD LENGTH
          FILE ID   CATALOGUE NO   TRANSACTION / FILE   TRANSACTION / FILE     MNEMONIC NAME            HISTORY CODE

            SA          809           00        0199       00        01        SA-MCLVFDC                    N
            SA          810           00        0200       00        05        SA-MCLVSVL                    N
            SA          811           00        0205       00        01        SA-MCLVSDC                    N
            SA          812           00        0206       00        05        SA-MCLVSSD                    N
            SA          813           00        0211       00        01        SA-FL-FUFC                    N
            SA          814           00        0212       00        01        SA-FL-SUFC                    N
            SA          815           00        0213       00        01        SA-F-SSC                      N
            SA          816           00        0214       00        01        SA-S-SSC                      N
            SA          917           08        ****       02        02        SA-TRAN-CD                    N
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                                     MODEL STATE INFORMATION SYSTEM
MSI8030                              STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                             DATA ELEMENT TABLE                                                   PAGE     1

                      RECORD INFORMATION                                          NAME INFORMATION
                                   START POSITION              FIELD LENGTH
         FILE ID   CATALOGUE NO   TRANSACTION / FILE      TRANSACTION / FILE      MNEMONIC NAME              HISTORY CODE

           SH          301             00       0001           00       02         SH-FILE-ID                    N
           SH          302             00       0003           00       05         SH-REC-ID                     N
           SH          303             00       0008           00       03         SH-CAT-NO                     N
           SH          304             00       0011           00       05         SH-CUR-UP                     N
           SH          305             00       0016           00       05         SH-LST-UP                     N
           SH          306             00       0021           00       30         SH-OLD-VAL                    N
           SH          307             00       0051           00       30         SH-NEW-VAL                    N
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MSIS030                                            MODEL STATE INFORMATION SYSTEM
                                                   STANDARD PROCESSING SUBSYSTEM

DATE 05/11/77                                          DATA ELEMENT TABLE                                             PAGE     1

                                  RECORD INFORMATION                                         NAME INFORMATION
                                      START POSITION           FIELD LENGTH
        FILE ID   CATALOGUE NO     TRANSACTION / FILE      TRANSACTION / FILE           MNEMONIC NAME                 HISTORY CODE

          VE          455              01        0001           05        05              VE-ID                          Y
          VE          456              16        0006           05        05              VE-ID-REF                      Y
          VE          457              08        0011           07        07              VE-PHS-ID                      Y
          VE          458              15        0018           01        01              VE-TYPE                        Y
          VE          459              21        0019           06        05              VE-EFF-DT                      Y
          VE          460              27        0024           06        05              VE-EXP-DT                      Y
          VE          461              35        0029           01        01              VE-STATUS                      Y
          VE          462              36        0030           04        04              VE-CON-ID                      Y
          VE          463              40        0034           05        05              VE-MOD-MCL                     Y
          VE          464              45        0039           01        01              VE-MOD-DEC                     Y
          VE          465              46        0040           03        03              VE-TREAT                       Y
          VE          466              49        0043           03        03              VE-ALT-TRT                     Y
          VE          467              52        0046           03        03              VE-MOD-FRE                     Y
          VE          468              08        ****           30        30              VE-ABSTRAC                     Y
          VE          469              33        0529           02        02              VE-REASON                      Y
          VE          470              00        0531           00        05              VE-LST-UP                      Y
          VE          471              00        0536           00        02              VE-HISTONE                     Y
          VE          472              16        ****           02        02              VE-REPEAT                      Y
          VE          473              08        ****           06        05              VE-TAR-DT                      Y
          VE          474              16        ****           06        05              VE-ATT-DT                      Y
          VE          475              14        ****           02        02              VE-MIL-COD                     Y
          VE          476              22        ****           01        01              VE-DEL-CD                      Y
          VE          477              16        ****           30        30              VE-MIL-ABB                     Y
          VE          905              06        ****           02        02              VE-TRAN-CD                     N
          VE          909              08        ****           01        01              VE-CRDT-CD                     N
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                                             MODEL STATE INFORMATION SYSTEM
MSIS030                                      STANDARD PROCESSING SUBSYSTEM
                                                                                                            PAGE     1
DATE 05/11/77                                     DATA ELEMENT TABLE

                            RECORD INFORMATION                                    NAME INFORMATION
                                START POSITION              FIELD LENGTH
     FILE ID   CATALOGUE NO   TRANSACTION / FILE        TRANSACTION / FILE        MNEMONIC NAME            HISTORY CODE

       VI          326           08        0001            07        07           VI-PWS-ID                     Y
       VI          327           00        0008            00        30           VI-PWS-NAM                    Y
       VI          328           00        0038            00        01           VI-PWS-TYP                    Y
       VI          329           00        0039            00        09           VI-POPULAT                    Y
       VI          330           15        0048            02        02           VI-REG-LVL                    Y
       VI          331           17        0050            04        04           VI-CONT-ID                    Y
       VI          332           00        0054            00        01           VI-SRC-CD                     Y
       VI          333           21        0055            05        05           VI-LAB-ID                     Y
       VI          334           00        0060            00        30           VI-LAB-NAM                    Y
       VI          335           26        0090            06        05           VI-SPLDATE                    Y
       VI          336           32        0095            04        04           VI-SPLREQD                    Y
       VI          337           36        0099            04        04           VI-SPLTAKN                    Y
       VI          338           40        0103            03        03           VI-AN-METH                    Y
       VI          339           43        0106            05        05           VI-AN-RESL                    Y
       VI          340           48        0111            01        01           VI-AN-DEC                     Y
       VI          341           49        0112            06        05           VI-ANDATE                     Y
       VI          342           55        0117            06        05           VI-SAMPLCT                    Y
       VI          343           08        0122            02        02           VI-VIOL-TP                    Y
       VI          344           10        0124            06        05           VI-VIOL-DT                    Y
       VI          345           16        0129            05        05           VI-MCLVIOL                    Y
       VI          346           21        0134            01        01           VI-MCLDEC                     Y
       VI          347           22        0135            03        03           VI-SPLVIOL                    Y
       VI          348           25        0138            04        04           VI-NUMSPVI                    Y
       VI          349           29        0142            02        02           VI-VIOLDUR                    Y
       VI          350           31        0144            01        01           VI-NOTIPUB                    Y
       VI          351           32        0145            01        01           VI-NOTISTA                    Y
       VI          352           00        0146            00        02           VI-REGION                     Y
       VI          353           00        0148            00        02           VI-DISTRIC                    Y
       VI          354           33        0150            01        01           VI-SPLTYPE                    Y
       VI          355           34        0151            10        10           VI-SPLKEY                     Y
       VI          800           44        0161            06        05           VI-DT-RPT                     Y
       VI          801           50        0166            02        02           VI-LST-RPT                    Y
       VI          802           00        0168            00        01           VI-LAB-OWN                    Y
       VI          803           01        0169            05        05           VI-VIOL-ID                    Y
       VI          804           00        0174            00        05           VI-LSTUPDT                    Y
       VI          805           52        0179            25        25           VI-REMARKS                    Y
       VI          806           00        0204            00        05           VI-MCLVSSD                    N
       VI          915           06        ****            02        02           VI-TRAN-CD                    N
       VI          916           08        ****            01        01           VI-CRDT-CD                    N
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